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Robert W.
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On planets, the shift was just enough to cause fear; auroras flamed for an hour...

DARK RECESS

FEATURE NOVEL OF COSMIC SECRETS

• By George O. Smith •

(author of "The World-Mover")

Clifford Maculay was the one man who could explain the curious shift in the universe, which was far more than the academic matter it seemed to be. But Maculay had been "cured", and was no longer interested...



CLIFFORD MACULAY reacted instantly to the doctor's question; he became half-angry, completely indignant.

Doctor Hanson smiled. "You're not angry at the question," he said quietly; "you're not even surprised that a man of seventy should ask such a question. What you are indignant about is that your mind denies such a need. Cliff, you're trying to run your body with your brain."

"Naturally. So what has my love life—?"

"You've got glands too," remarked Hanson. "And some of them are damned important to mental balance."

Maculay sat forward on the chair, tense and alert. He was not accustomed to being browbeaten; Maculay gave the orders and other people jumped. Now that he was on the receiving end of the deal, he was preparing for the battle of wits. But Hanson had seen many such men in forty-odd years of medicine. Hanson did not see Maculay the Mind; he saw a man of thirty-eight, soft from lack of exercise, underweight from the constant burning away of nervous energy. He saw a fine physical machine being run into an early grave or a sanatorium, because the mind behind those sharp blue eyes was too damned ignorant to understand that it could not trade the worn-out body for a new model with white sidewall tires, automatic defroster, and long-playing record attachment.

"Relax," said Hanson; "I'm not going to argue with you."

"Good. Now let's get down to business."

"Exactly what do you want?"

There are two basic ways to treat personality difficulties. One: change the personality. Two: remove the psychic blocks which are at the root of the trouble. The first method may be simpler, in some cases, and may be accomplished without apparent harm. But what if an individual's worth to society is so entangled with his personality troubles that when you change the latter, the former disappears, too?

Maculay pondered for a moment. "Do you understand variable-matrix radiation mechanics?"

"Probably as little as you know synaptic pressure theory."

"That's the trouble. I can't explain in detail what I want. I can only explain by analogy. Look, Doc, for eight years I've been experimenting with some mathematics along an entirely new field of theory. Indications are that gross matter can exceed the velocity of light under certain conditions; but in attempting to define these conditions by mathematical formulation I've hit a snag."

"What manner of snag?"

Cliff leaned back in his chair and stared at the ceiling. He was physically relaxed, now, but only Doctor Hanson could hazard a guess as to how much of this man's metabolism went into the job of keeping that big brain in high gear.

"Physical matter cannot, of course, exceed the speed of light in universal space. However, normal space is no longer normal when it is warped by electrostatic fields, electromagnetic flux, or gravitational lines. These universal effects produce a warping of physical space to such an extent that the warped area is no longer a part of, or connected in any way with the universal space we know. It becomes a small island of separate space which may be accelerated or retarded. That's the snag, Doctor."

"I don't see it."

"I always end up with one equation that has two answers. Theoretically, one must be real and one must be imaginary, somewhat like the solution to a simple quadratic; in that case you can disregard the answer that tells you that you are confronted with a minus quantity of mass, for instance, and you can select the positive quantity as being correct with neither difficulty nor ambiguity. In this case, being more complex by far, I find two roots indicating a positive and negative space, mutually inimical. And, what causes the trouble is the fact that the determinant depends upon the develop-

ment of a negative gravitic field."

"Well—?"

Maculay laughed bitterly. "This is sheer nonsense; like dividing by zero."

Hanson shrugged. "So?"

"Obviously I have made an error."

• DOCTOR HANSON AGAIN

Hanson shrugged, wondering what the man was getting at. Electrical engineers confronted with a tough problem in vector analysis consulted other electrical engineers; they did not bring their unruly vectors to a psychiatrist or physician and hope to have them solved. They came to medicine and psychiatry when they began trying to integrate and plot the rhythmic sway of their secretary's hips, or began to see the outline of a woman's lips in the catenary of a suspension bridge.

"Obviously," nodded Hanson.

"So here it is again, Doctor. I've been back and forth across my equations for the past eleven months and always come back to the same errata."

"But what can I do?"

"Someone must check my equations—someone who is viewing them as a competent, but unbiased, observer."

"An excellent idea."

Maculay spread helpless hands wide. "I sound like an egomaniac," he said, "but there is no other man on earth who can follow my mathematics but I."

"Not even the thirteen fellows who understand Einstein?"

Maculay snorted. "Understood," he said emphasizing the last syllable. "Einstein was difficult when first made public; nowadays there are plenty of men who know more about Einstein's theories than the man himself. In my own case it is similar. No other man has had a chance to study my theories; I have a few adherents who try to follow them, but they have not the full time to put to the job and so they are far behind. Besides, I'd trust none of them."

"I see."

"Ergo, Doc, what I say is this: You are to hypnotize me. You are to give me a post-hypnotic suggestion that I am to forget the error in my calculations, that I am to re-check them carefully and completely, without knowing that some factor in them is in error. Then and only then can I locate it; as soon as I locate this error, I am to remember everything."

"Supposing your mathematics is not in error but is entirely correct—suppose no error truly exists?"

"There is that possibility; but if the paradox is true, I will have at least been forced to forget that I once believed an error existed. But I must check this math as a competent and unbiased observer."

"That can be done."

"Good; now let's get going and let's have no more nonsense about my glands."

"This I can do; I will help you."

Maculay relaxed while the doctor produced his hypnoscope and set it up on the table. With Maculay's cooperation, he was in the hypnotic trance in a matter of seconds.

DOCTOR HANSON LOOKED at the man. This was probably the first time that the entire man had relaxed, mind and body, in years. But Hanson did not see the point: Maculay may have run into a mathematical paradox, but it was not of honest mathematics. Figures do not lie, but liars can figure; it is more than possible that a brain will introduce an error in order that the facts of the case be unrecognized. Hanson nodded quietly. Man was mind and glands and body and appetite, bones, hide, and ulcers. If a sick mind can produce a sickness of the body, the reverse is true. Cliff's error was not in his mathematics; it was in his life.

Of all the things Maculay needed, more work along the same line with no relaxation was not among the list. What Maculay needed—or would eventually get in a sanatorium—was a long period of relaxation. Fun and games; a bit of competition; a hangover, and the sheer

physical delight of wrapping an arm about the slender waist of a female and swaying to and fro to the rhythmic beat of tomtoms and the howl of a well beaten clarinet.

At seventy, Jay Hanson had learned the impatience of youth. Maculay had a lot of time to finish his equations. Scissor a year of Maculay's life and he could then finish this; let him go on as he was and he would burn himself out at a mere fifty.

He looked at Maculay seriously. "You have been working too hard," he said.

The reply came instantly, like the echo of an automaton.

Hanson nodded to himself. It was obvious; when the burning drive of that demanding brain was stilled, the subconscious recognized the fact that Maculay was working too hard.

"Maculay's Equations are in error," said the doctor.

Cliff Maculay stirred, shook his head, and began to disagree violently. Then he relaxed, since he had come there to solve an error; but he had become tense again.

Hanson shook his head unhappily; this was going to take time and effort. He must take this conversion slowly, since it was apparent that the slightest touch upon dangerous ground would trigger the big brain into reaction and perhaps undo in the space of a second the work of several hours.

Gradually, prying and working, Hanson began to elicit information from Maculay. Bits of character traits, an impulse suppressed, an attitude formed in youth, an impediment created to shut out the demands of normal living, desires for this and wants for that. Hanson looked at them clinically, then either reversed them or let them stand, depending upon their possible affect. Each phase took time; it is not simple to take a man who has never held a billiard cue and make him believe that excellence at the pool table is an evidence of a sharp eye and fine coordination instead of the result of a misspent youth. And Cliff's attitude towards women was

troublesome. His mother, the youthful reading of too much of King Arthur, or Lord knew what, had given Maculay the odd idea that a woman was a sort of goddess, not to be touched by the hand of clod-like man. To reverse this attitude towards a more practical attitude was difficult, since the reversion must not be complete. Hanson did not want Cliff to reverse completely, to the other extreme, where the man would go out and start treating women like galley slaves, punching bags, or chattels—which, in fact, was about the way Maculay had expected to be treated.

Hanson took a brief rest from the hard job, by recalling and telling Maculay every risqué story he could remember.

Then he was at it again, prying and probing, and reversing Maculay's attitude on gambling, liquor, tobacco, and politics. He made a slight revision on Cliff's idea of proper dress; the physicist had a horror of appearing dirty, even when engaged in the dirtiest of jobs. With some effort the doctor convinced Maculay that a mechanic emerging from beneath a car with a face full of grime was not automatically an undesirable character, either to men or women. The crux of the matter was whether he liked that condition of dirt or not.

• **WITH A NUMBER OF** factors accomplished, Hanson took a deep breath, felt his pulse, counted his heartbeat and respiration, and fished for a pill from his desk and swallowed it quickly before he went on. The hardest part was to come.

Cliff took himself seriously, far too seriously. With delicate verbal barbs, Hanson began to poke fun at some of the imbecilities of pedantic reasoning. Maculay offered resistance at first, but Hanson worked him over the ground carefully, pointing out that Maculay, the only man in the world capable of understanding the variable-matrix wave mechanics, was in no position to snort at his fellow man. After all, Gertrude Stein had

once gained great popularity on the theory that no one could understand her and therefore she must be sheer genius. Eventually he had Cliff laughing over an old limerick:

*The wonderful family Stein,
There's Gert, and there's Ep, and
there's Ein.*

*Gert's poems are bunk;
Ep's statues are junk,
And nobody understands Ein.*

Hanson worked over Maculay's Equations with a bit of acid humor. In third person, he had Maculay chuckling over the physicist who worked for years on some mathematics that did not come out even. Gradually, the doctor convinced his patient that he was not Clifford Maculay, the reknowned abstract mathematician, but Maculay's nephew—the black sheep of the family—who viewed the brainy members with as much distaste as they viewed him. Young Cliff had often been mistaken for his brilliant uncle, and found this funny, since he felt himself smarter than his namesake; he, young Cliff, had fun whereas his uncle had only hard work to show for his life. Actually, any pondering of his uncle's work made young Cliff sick to his stomach, and he was glad to ignore such things; the whole theory was so much stupidity.

And for one year, Clifford Maculay, physicist, would be as different from his former self as was possible without breaking the law to bits.

"At the end of this year, you will return to your apartment in Washington, take a good night's sleep, and awaken as Doctor Clifford Maculay. Then, and only then will you remember; and you will realize furthermore that this job of relaxation has been forced upon you for your own good. You will then be able to solve the error in your calculations."

Hanson paused for a moment, pondering as to the advisability of giving the hypnotized physicist a key-word to bring him out of the post-hypnotic suggestion. But Doctor Hanson was seventy years old;

he knew all too well that a year from this moment he might be dead and gone. He viewed it calmly, but not disinterestedly, and decided against a key-word; it only introduced a conflicting factor.

Let the man awaken of his own accord.

Then he awakened Maculay, who sat back in his chair with a chuckle, reached for a cigarette from the box on Hanson's desk, and puffed at it with relish.

"How do you feel?" asked the doctor.

"Like a million," said Maculay.

"Good. Come back in one year. I'll have my girl make an appointment. For now, we're all finished."

• DOCTOR HANSON STOOD and watched Maculay head for the door; the physicist's step had a certain bounce, curtailed by the fact that the unused muscles of his body were not used to the catlike stride of the completely balanced, healthy man. A few days of that sort of bounce and Maculay would have it. The door closed exuberantly and Cliff was on his way to a one-year binge.

He paused once outside of the doctor's office. Ava Longacre was bent over some notes, and Cliff viewed her contemplatively. She stood up and smiled at him. It was a sort of professional smile, the kind she gave all of the doctor's visitors; it made no difference to Ava whether the visitor were seventy or seventeen. She gave each of them the same dry smile.

Cliff crossed the office in a quick stride and put both hands on her shoulders. He drew her forward, felt her instant stiffening relax; with a cheerful upsurge of spirit he put an arm around her, tilted her face upward with his free hand and kissed her. He felt her yield to him, press against him softly, then respond.

Cliff knew he could have her, but in that moment he also knew that he really did not want her. Ava was a bit over thirty; she had a quiet, mature quality—good-looking, but

far past the radiant flush of youth. A hard-working woman, efficient, intelligent, Hanson's nurse, medical aide, and receptionist, did not offer the fun and frivolity that Cliff Maculay sought.

He stepped back and smiled down at her. "Nice," he said with a chuckle. Then he kissed her again, lightly on the mouth, turned, and left the office.

Her cheeks burning, Ava Longacre stamped into Hanson's office.

"What goes on?" she demanded.

"What on earth did you do to that man?"

"Why?"

"He came in here like the proverbial absent-minded professor, his eyes blank and sort of muttering to himself about radiation mechanics or the like. He didn't even look at me."

"Then?"

"On his way out he sort of grabbed me and kissed me."

Hanson nodded appreciatively. "You liked it?" he chuckled.

Ava sat down, landing in the chair with a thud. "When a man puts a hand on me and my knees turn to jelly," she said quietly, "I oscillate madly between hating his guts and wanting him to try it again. That sort of thing would play hell with a girl's morals."

"Shucks," chuckled Hanson. "I've just violated all of the rules of medicine. I've just treated a man against his will—and turned an introvert inside out."

"You sure did," nodded Ava.

"He'll be back again in a year—and normal, then."

"But how do you turn an introvert inside out?"

"Reverse his sense of values."

"But—"

"His memory pattern? That's difficult. To make him more or less stable for that year, I sort of tampered with his memory on a temporary basis, also. He thinks he is all sorts of things that he has never been—but has probably wanted to be from time to time."

"Is that why he kissed me?"

"Partly. But you're the woman he should have when normal, not as he is now. That's—"

"So you gave him a false memory, complete with a lot of details to explain just about every possible question, hey?"

"Yep."

"And just how was this background furnished?" she demanded.

"Remember it is only temporary and need not be complete. Just sufficient to justify its being."

"Don't quibble."

Hanson laughed. "Well, when a man of seventy starts to furnish a bit of background for a youth of thirty-odd, what better than a few true experiences from the old man's past."

Ava Longacre snorted. "I'll bet you were a hellion in your youth," she snapped. "And in your old age you're a nasty old lecher."

Hanson squinted at her. "I wish I were forty again," he leered. "But worry not, m'lady. Maybe the basic idea was mine, but Maculay kissed you on his own account. And I commend his taste."

Ava uttered a single, explosive "Oh!" and stalked out angrily, slamming the door behind her. She leaned against the hardwood panels and listened to the roar of Hanson's laughter die in a slow gurgle. She pegged it properly as part hysteria; the hours of hard mental effort spent on Maculay would have taken a lot of pep out of the Old Boy, and he would then clutch at anything remotely amusing and make an uproariously funny incident out of it. But this was not funny.

She remembered Maculay's hand on her, and her body went supple against the door. Then by sheer mental effort she snapped her head erect and walked from the door, determined to forget it.

Ava did not recognize the fact that for hours, days, or months—and perhaps forever—she might be telling herself that it was a good thing to forget about.



THE ISLAND PRINCESS took off on schedule, arrowed into the blackness of space, and set her nose-sight on Venus. She was forty hours a-space when it happened. And the *Island Princess* was one of the four spacecraft close enough to the thing to have its presence recorded in the celestial globe.

It came with a roar of sound from the radio, which eliminated all communications instantly, and continued on a diminishing power for an hour until it fell below the cosmic noise level. It appeared in the celestial globe as an ebon shaft; measurements made it a half mile in diameter but extending from beyond the range of the globe in both directions. It was as straight as it could be. On the other ships, the same facts were noted.

Upon the several planets of the solar system, cosmic-ray counters went crazy. Showers of unprecedented violence bathed the solar system in a raging torrent of high-energy particles. The showers continued, diminishing in intensity as time went on; the slower particles arriving last, of course.

But the one thing that caused consternation throughout the entire solar system was a sickening *shift*. Spacecraft and planet gave a tiny, queasy slip, sort of like a heavy man who has just trod upon a grape. Things move according to their mass and according to their distance from the black shaft of energy. On planets, it was just enough to cause fear; the most infinitesimal waver in the constant course of the planets awakens racial fear. In spacecraft, the shift was more violent, but here people were prepared for a bit of wobble.

The auroras flamed bright for an hour; as soon as the shift had shak-

en the wits out of every human in the solar system, the big observatories set their big glasses on the fixed stars and consulted quadrant-protractors to ascertain what the shift had done. On photographic plates of operating telescopes, the shift was barely noticeable upon the images of brighter stars. The dimmer ones had danced aside and back too swiftly for the emulsion to register. But it had been a swift jiggle up and back; now things were as they had been once more save for the big mystery that caused the radio lanes to buzz, and made men ask their neighbors what it could have been.

• **CAPTAIN BARDELL OF THE** *Island Princess* went to the salon after the radio had told him what little could be told about the incident. He told the passengers what he knew as a matter of interest, and because they had been as close to the phenomenon as any other human being.

Cliff Maculay, bent back across the bar with his elbows hooked over the edge and a glass in his right hand, chuckled amusedly.

"But this isn't funny," complained a comely woman in a strapless gown at his left.

"Dorothy, darling, you're wrong," he laughed.

"I suppose you know what it is?" came the cynical reply from the redhead on Cliff's right.

"Helen, that 'thing' was a manifestation of the application of variable-matrix wave mechanics to intrinsic space by the real and/or unreal roots of negative space."

"That's utter gibberish."

Maculay laughed. "Verily," he chuckled. "But my revered Uncle Clifford will—about now—be telling the world the same thing in about the same incomprehensible collection of dictionary fodder."

Captain Bardell heard, and came to stand before Maculay. "Clifford?" he said uncertainly. "Clifford Maculay?"

"Right name but the wrong character," said Maculay, sipping from

his glass. "Doctor Clifford is the genius in the family; Cliff, the nephew, has only genius for getting into mischief without getting into trouble about it. To each his own," he chanted, lifting his glass in a toast.

Bardell was openly disappointed. "I'd hoped you might give us an idea of what was going on."

Maculay turned, rapped the bar with the heel of his glass to get attention, and then turned back to the captain. "I can," he said cheerfully. "But do you have the faintest idea of why nephew was relegated to the Outer Darkness?"

Everybody, listening to Cliff, shook their collective heads.

Maculay laughed. "They had me studying under him for years. Doctor Maculay is a slave driver and a martinet. Cigarettes, liquor, and wild women are annoying things that detract from the single-purposedness of life. Doctor Maculay is the kind of duck who would rather work overtime than make frolic with a dame—and he expects everybody who works with him to do the same. He also pays them accordingly, since a small room, a sterile diet, and a minimum of clothing are all that is necessary for any man dedicated to science."

"So?" asked Bardell, a bit angry at this man for belittling one of the solar system's greatest minds.

"So Cliff, the ne'er-do-well, used to take a few of Uncle Clifford's well-flanged ideas, add a character, stir well with a villain and a dame, and emerge regularly with a bit of science fiction. I was Ed Lomax, one of Larimore's cover names until John used the right name instead of the pseudonym, and people started to write fan letters to Clifford Maculay, MM, PhD, et al. Shortly afterwards I was out of a job."

"Then you do understand some of this?"

Maculay grinned and nodded.

"But Doctor Maculay will be able to figure this thing out?"

Cliff nodded again, and smiled. "Good thing, too," he chuckled. "He is the only man in the system that can handle it without going off half-

cocked. Maculay may be a stuffed shirt but he is no imbecile. Tinkering with inverted space—or pouring a quart of nitric acid over a half-gallon of glycerine—might be deadly unless you understand what you're doing. Maculay is super-cautious about anything that he does not understand completely. I cannot say the same for his underlings, who casually point out that mankind had been using electricity for years and years before they knew anything about it. But," he said with a laugh, "enough of the manifestation of the unreal roots of variable-matrix wave mechanics. Maculay's wastrel—but interesting—nephew is about to enjoy life."

Cliff winked at Dorothy, patted Helen on a bare shoulder, and then led Alice towards the dance floor.

"Doesn't this mean anything to you?" she asked him.

"Uh-huh," he said with a smile. "At about three cents per word; that black shaft of energy is an idea coming to life."

"What kind of idea?"

"Um—let's see. That black shaft of energy was really a spacecraft, passing through the solar system at a velocity higher than the speed of light. Some extra-solar race, colonizing the galaxy. What we detected was the space-wake of such a craft. You have no idea of the energy kicked up when a body passes through space at a velocity higher than that of light. Then Our Hero, bullied by his superiors, shows that he has measured the energy-curve and solved the secret of interstellar travel."

A slight frown came to Maculay's face. "The trouble is that this supergalactic race has learned how to create negative space before the ship and re-create positive space behind it to keep from having the—the—" A bead of sweat came upon Maculay's face and he became nervous. He looked around, almost wildly before continuing, "the—entire universe," he concluded lamely. "Negative space is self-propagating, you know." Maculay finished this last with a wince of pain.

Then Maculay straightened up with a laugh. "That's lousy," he said. "Larimore wouldn't buy it. We'll have him go out and meet some four-armed monsters who think that human meat is superb. That's crummy too, but it's an idea. C'mon, m'lady, let's dance!"

• **THE TELEPHONE RANG**
on Doctor Hanson's desk. It was Ava, from the outer office. "Man by the name of Redmond to see you, doctor," she reported.

"Has he an appointment?"

"No, that's why I'm calling. He claims it is a matter of impor— No, Mister Redmond, you cannot go—"

The doctor's door opened abruptly and the man called Redmond strode in. "Where is Maculay?" he demanded sharply.

Doctor Hanson looked up at Redmond calmly. With insulting deliberation, Hanson eyed the man, while Redmond began to fume. Redmond was tall and thin, a bit too tall and a bit too thin in the doctor's estimation. He was thirty to Maculay's thirty-eight, but did not smoothe his impatience and ambition behind a cloak of politeness.

"Sit down, Mister Redmond. I'm interested in you."

"Where is Maculay?" came the repeated demand.

Hanson smiled slowly. "I'm interested in trying to discover just what it is about abstract mathematicians that makes them think that they can stamp their way through life, disregarding not only the rights of others, but their own as well."

"Enough of this damned foolishness—"

"Shut up, you young whippersnapper!" roared the doctor in a voice that rattled the windows. Redmond shut up. "I'll have respect from you, Redmond. And if I don't get it, you'll leave. Understand?"

Redmond bristled.

"Relax," said Hanson. "I'm no longer able to punch your face as you request by your actions, but I know several men who would be most happy to help me in this matter. Now, what is it that you want?"

"I want to know where Maculay is."

"I don't know."

"Damn it, you do know."

"Redmond, I'm not a liar."

Redmond leaned forward over the doctor's desk. "Maculay came here," he said, "and I know why. Maculay did not return from here, and I want to know why."

Hanson leaned back in his chair. "Doctor Maculay came here and discussed his difficulties with me," he said. "During the course of the discussion, it became quite evident that Maculay was on the verge of a nervous breakdown because of too much hard work and too little relaxation. I convinced him that a long vacation would enable him to live and be productive longer than he might enjoy if he went back and killed himself on his job."

"So where did he go on this vacation?"

"Maculay admitted that if a single soul knew his address, they'd be sending him problems within a week. He took off, destination unknown."

"Did he say when he would be back?"

"In one year."

"A year! My God! We can't wait!"

"Can't is an impossible word," remarked Hanson.

"But we must find him."

"You might start combing the solar system," suggested the doctor.

"Impossible. Yet—"

"Redmond, there have been many indispensable men in history who were not so indispensable that their leaving caused affairs to stop short. I admit that their plans often flopped, or that history took a little longer to get itself made when their driving force died. But not a man on record has ever been truly indispensable."

"But you don't understand," complained Redmond. "It's about that blast of energy that shocked space."

"I guessed as much. What is—or was it?"

"We don't know; Maculay does, or can deduce its meaning."

REDMOND STARTED TO stride up and down the office at this point, talking half to himself and half to the world in general. Through the still open door, Ava could hear him, and since the danger of attack had been averted, she decided to close the door. But Hanson waved her inside where she sat in one of the inconspicuous chairs along the far wall. Both Ava and the doctor watched Redmond quietly.

"From what little we know of it by direct observation it came all at once—a shaft of energy as instantaneous as birth. Where once was empty space, this bolt of energy was created. The energies it created showed no directional qualities, and it extends as far in either direction from here as we care to imagine. The distant energies are still coming in from both directions, diminishing because of the tremendous distances, but still showing nothing directional."

"But this shaft of energy must have come from somewhere?"

"Did it?" exploded Redmond. "Did it come from somewhere—or did it burst into being instantly from one end of the universe to the other like the creation of a rope from nothing all along its length? Actually, we know this: Its duration was as close to instantaneous as anything might be. The rest of the phenomenon was merely persistence of the energies it created."

"Those are questions that I cannot answer."

"Maculay could."

"You assume that this thing might be in Maculay's field?"

Redmond nodded. "We charted the energy curve," he said. "Then one of the boys integrated the curve and came up with a formula for the curve which I saw and without any trouble at all reduced to one of Maculay's Equations. Do you know what this means?"

"No. Of course not."

"This means that the validity of Maculay's Equations is proven fact. Just as Maxwell's Equations were proved by the existence of electro-

magnetic waves in nature, so are Maculay's Equations proved by the existence of this manifestation of the real and unreal roots of space, occurring in nature." Redmond resumed pacing again. "What is maddening," he said, "is the fact that we do not know where it came from."

Hanson shrugged. "You said it sort of leaped into being."

REDMOND PAUSED AND beat one fist down on the doctor's desk for emphasis. "So it seems to our blind, deaf, stupid senses who plod along the universe limited to the speed of light or sound. Man—the fleet bullet snaps past your ear at a speed faster than sound. Can your limited senses tell me whence it came?"

"Yes."

Redmond shook his head. "Not from the sound of the *Snap!*" he snapped. "You tell from the sound of the gun—which comes later! With a silencer, you would be unable to line the flight up. So," said Redmond, staring at the wall again, "something fired a bolt of energy that propagated faster than light, creating its own negative space as it passed. What it was we shall never know. But—" and he bored at Hanson with sharp eyes,—"get me Maculay and we shall follow it into interstellar space!"

"And if Maculay were to die tomorrow?"

"Then we would follow it sooner or later anyway. A bit more fumbling, a bit more walking an unfamiliar way in the dark, but we would get there." Redmond looked at the doctor solemnly for a moment. "A year?"

"A year."

"Hell," snapped Redmond, "in a year we can do it ourselves! A year! Hanson, Cliff Maculay has always kept a volume of data from me. I am going to open his desk and get that volume, and go to work on this thing myself. Were he here he would forbid me, but he is not here. I—"

"Why are you telling me this?" asked Hanson.

"Someone must be told, and I—"

Redmond trailed off uncertainly. Then he nodded and left the office as abruptly as he had come in.

Ava blinked. "What do you make of him?" she asked uncertainly.

"Very simple. His is the case of not-quite-genius working at the feet of true genius. His pattern is poorly aped after Maculay's forcefulness, but obviously lacks Maculay's weight. He wants to give the impression that he is cut of the same cloth as Maculay. He is uncertain of himself, or he would not bluster and threaten; nor would he be so completely at sea without Maculay. He has a frustration; Maculay's secret data has been withheld from him. He is jealous of Maculay and also fears Maculay or he would not make a confession to me that he was about to break orders. Furthermore, he is convinced that he can solve this thing without Maculay's help, but wants other people to believe it also."

"But could he get into trouble?"

Hanson laughed tolerantly. "Any man who has lived beyond the age of eighteen months can get into trouble," he said. "And it's good for a man to get into a bit of trouble occasionally. Security is a fine goal, but it is danger that sharpens the wits and eventually sets the character into such self-confidence that his security comes from within rather than without."

He leaned back in his chair and thought for a moment. He was not quite correct in telling Redmond that he understood nothing of Maculay's work. During the hours Hanson had hypnotic rapport with Cliff, he had absorbed quite a bit of Maculay's theories. Not that Hanson could stand in Maculay's shoes—or even his baby slippers for that matter—but he had a fair idea of what Maculay was driving at. He took this on faith rather than a real understanding—as any man might nod his head and accept the formulation of the three degrees of infinity because some bright man told him that such existed, one still might not understand why the number of spots on a line and the number of spots on a

plane—when a plane has an infinite number of lines and each line an infinite number of spots—were both of the same degree of infinity.

Something niggled at Hanson's mind—something important in just plain horse-logic that had come to him fouled up in a barrage of words and formulations that were so much triple-talk to the man untutored in abstract theory on variable-matrix wave mechanics. In the maze of completely confusing theories, it was like the sighting of a shaped stone arrowhead in the rubble of a landslide, or finding an empty tomato can lying on the absolutely barren and completely useless fifth satellite of Saturn.

Someone had shouted "Two plus two equals four" amid the babble of an insane asylum, and it made sense.

Hanson ordered his whirling thoughts, marshalled them as only a man who has pursued the mysteries of the human mind for fifty years could do, and made his recollections come out consecutively.

And then he hit the desk with his hand. "Negative space depends upon the generation of a negative gravitic field," he muttered. "Which produces the unreal root, and positive and negative space are mutually inimical."

"What was all that?" asked Ava.

Hanson shook his head. "Damn it, Redmond is right. We need Maculay!"

● **A**VA STARED AT THE doctor. "But..."

"Ava, from what I gather, Redmond is about to get into the production of a negative gravitic field, which will generate negative space, which will destroy this space. Doubtless that shaft of energy, so called, was nothing but a shaft of negative space that met with and cancelled real space with the resulting outburst of energy."

"But—"

"We need Maculay," said Hanson solemnly. "No one will believe me, for I obviously know far too little of the facts. I admit that I am just guessing, but I have the feeling that

the error in Cliff's Equations was no error at all. What drove Maculay into a mental whirly-gig was the fact that he had discovered at the end of his fingertips the ability to destroy the solar system—or destroy something equally as big. His was the shock of the child who has been playing with matches in a powder-house and discovers long afterwards just what fate he had escaped by sheer luck."

"But what are we going to do?"

Hanson smiled confidently. "We're going to get Maculay back here long enough to tell us the truth."

"But you don't know where he's gone."

"Since Cliff now has all of the instincts of a tomcat," chuckled Hanson, "all we need do is to imagine where a tomcat would go—and go there. Ava, if you were a brazen hussy, where would you go to huss?"

Ava froze. "I'm not!" she snapped. "and I wouldn't know."

"Maculay went to Venus," said the doctor, "where reformers, theologians, and politicians have not taken all of the fun, chance, and sting out of life."

"But how are you going to get him back?"

Hanson shook his head. "I'm not," he said; "no spaceline would take me. I'm seventy, a little creaky in the arthritis, a bit leaky in the pump, and a trifle sclerotic in the arterios. I admit that I am the healthiest doddering old man on earth—but it is on earth that I shall stay."

"Then—" said Ava uncertainly. Her eyes began to widen with growing understanding and she backed away slightly.

Hanson nodded. "You're going to go get him."

"I'm not."

Hanson shook his head. "You'll be safe," he said. "At the present moment you have too many inhibitions to rouse a stir in Cliff Maculay."

Ava snorted angrily. She was still forgetting Maculay; in fact she forgot him four or five times each day. Each time she reminded herself that it was a good thing that she did not 'go' for his type of man since the

two of them would never get along.

Defensively, Ava said, "I'm to go to Venus and comb the entire planet for a man on a binge?"

Doctor Hanson chuckled. "For he who knows the answer, Cliff Maculay would leave a trail a mile wide," he said. "But you'd never make the grade, Ava."

"You're quite right," she said.

Hanson grunted unintelligibly. It sounded like agreement to Ava, but was actually a grunt of disgust. The doctor was old enough to be beyond the sparring age, and he was disgusted at the sidelong mental attitude of a race that admitted that love, marriage, and a family were at the bottom of all effort—and then invented croquet, television, and chaperones to make it difficult.

● **HANSON LOOKED AT HIS** nurse, and shook his head slowly. He was willing to bet his hat that Ava remembered every line in Maculay's face. And that her dislike of Maculay was as genuine as a seven dollar bill, Hanson would also bet money on. He had not been untying mental knots for fifty years without being able to listen to one statement and hear the truth unspoken between the words. He watched her stand there uncomfortably, and knew that she was uncomfortable because she knew that he knew what she was trying to hide to herself. Deliberately letting her squirm, Hanson began to fiddle with his watch chain.

He was thinking with the back part of his brain, now. He needed Maculay; he had here before him a girl that could, if she were willing to admit it, go forth and get Cliff. But not the way she was, with her defensive armor all set up to fight against the Clifford Maculay that had kissed her and then patted her on the head and left to go in search of beer and beauty.

Hanson fiddled with his watch chain, then began to swing the Phi Beta Kappa key around his forefinger, winding it up and then reversing it to unwind and rewind in the opposite direction.

Ava stood there uncertainly, watching him whirl the chain. She could not leave without some explanation regarding her reticence about going to Venus for Maculay. Obviously Hanson was not finished with this conversation, yet he sat there deep in thought. Ava anticipated that he would come out of it with a more practical idea than sending her for Maculay, since that would not work.

"Relax," said Hanson quietly, after some time. "I wouldn't send you after Cliff Maculay; I wouldn't hurt you for the world, Ava."

"I know," she said. "I—"

"You've been dwelling on that subject too long," he told her.

She nodded.

"Probably losing sleep, too."

"I wouldn't say that."

"But you look as though you needed sleep."

"I don't really."

"Then why are you yawning?"

"Am I?"

"You yawn frequently. You should get more sleep. Why not rest? Sit down and relax. Sleep is the great restorer; you should take a short nap. Sleep, Ava. Go to sleep. I'll see that no one harms you. Sleep."

Her eyes fixed on the whirling watch charm, Ava slowly let herself down into the doctor's consultation chair and leaned her head against the back.

He passed a hand before her open eyes and she did not blink. With a quiet chuckle, Hanson dropped the watch chain into his vest pocket and sat back. "I'm going to help you."

"I know," she replied.

"You resent Maculay."

"I do."

"But it is true that your resentment of Maculay is because he is attractive to you—but wants a more vivacious and interesting type of woman."

"Yes."

"You also resent the fact that this desire of his is false, that any alliance he may make will also be

false while a true love awaits in you, unwanted so long as he is under my post-hypnotic suggestion."

"Yes."

"Then since you and he are quite alike in so many ways when normal, if you are reversed in personality as he is, you will then match his mood and desire."

• **WITH AVA, HANSON HAD** much less difficulty; he had known the woman for ten years, known her moods, her likes and dislikes, and her personality. He had, lightly, worked her over from time to time until his control over her was quite complete. It took him about two hours to turn Ava's personality inside out and to suggest that she remain extroverted until Maculay was returned to earth. For travelling expenses he filled her wallet and gave her hypnotic reason for possessing that sum of money. Then he snapped her awake and watched her leave the office with a cheerful stride.

"A hell of a note when the fate of the universe depends on libido and post-hypnosis," he grunted.

Seven hours later the *Evening Star* took off for Venus, and even Doctor Hanson might have had trouble in recognizing his nurse. Gone were the glasses, the mousy clothing, and the flat heels. From pedicure to hair-do and from hide to handbag. Ava Longacre was as changed as her personality.

And where Maculay had leaned against the bar, regaling a couple of women with idle chatter, Ava sat and watched four dazzled males vie against one another for the privilege of a dance, a smile, the purchase of a corsage or a drink—or the spacecraft itself.

She enjoyed it, but she remained a bit aloof; she had a job on her hands. She knew where she was going, and exactly how to find Cliff Maculay.



A LONE IN his office at night, while the *Evening Star* was starting the hike to Venus. Doctor Hanson sat thinking. He was piecing it together; and it was like playing with a jigsaw puzzle that had three-quarters of the pieces missing. He never would get the completed picture; it just took too many years of a man's life in study and application to finish the job. All he could do was to fit the meager pieces in where he thought they might fit, and then try to ignore the blank spaces that he could not possibly reconstruct.

At midnight, Hanson took to the telephone and called California.

He heard the operator say: "Chicago is calling Doctor Rober."

The switchboard girl at the far end asked: "Who is calling, please?" "Doctor Jay Hanson."

"Doctor Rober is busy at the moment; may I have him call you back?"

Hanson roared: "I know he's busy. Tell him it's Jay Hanson and see what happens."

A moment later there came a grumpy voice: "Hullo. What's so infernal important?"

"Steve? This is Jay."

"That's what the gal said; it better be important."

"To hell with your precious telescope, Steve; I want some information."

"You'd think we had nothing to do but cast horoscopes," growled the astronomer. "Or answer damned fool questions about the end of the world."

"Answer me one more."

"The world has been here for two times ten to the ninth years at least; you'll not live to see the end of it."

"Look, Steve, this may be im-

portant. Tell me, have any of your instruments shown any difference in setting since that streak of energy went through the solar system a few days ago?"

"Not that we can measure."

"But—"

"Jay, the best information we can collect is that the original streak was a long cylinder about a half mile in diameter. Dammitall, you could take a chunk a half mile in diameter and stretching from one end of the universe to the other, remove it from the universe and let the rest of space curl in to fill up what was missing; and when you were done, no one could measure it. A half mile is a small peanut compared to the immensity of space. Now can I go back to work?"

"In a minute, Steve. What do you know about Maculay's Equations?"

"Maculay's Equations? What do you know about them? I mean, what do you want to know about them?"

"I'm no abstract mathematician, Steve, but I'm forced to fumble in the dark with some very cockeyed theories that make no sense. Maculay has the idea that the generation of some sort of negative space would permit gross matter to exceed the velocity of light, but that this negative space would destroy by mutual cancellation this present, or positive space. Does that make sense to you?"

"Y'know what I think?"

"No."

"I think that old saw about the shoemaker sticking to his last is applicable. Stay with your neurones and your pills, witch-doctor, and leave the juggling of space to people who can sight nothing, falling from a vacuum into a void, and explain it."

"Fine," rasped Hanson. "Now that I've been properly roasted for meddling, what gives you to think that no one but an astronomer can think?"

"Steve—if I started to outline medicine to you, it would sound no better than your outline of Maculay's Theories did to me."

● HANSON CHUCKLED. "SO we're both stupid, according to the other. Now admitting that I'm stupid and get my income tax fouled up, cannot understand the degrees of infinity, and am completely baffled by the predominance of the value Pi in electricity, do I have a layman's grasp of Maculay's Equation?"

"Barely."

"Then suppose I postulate. Suppose that streak of energy had been a spacecraft passing by at a speed faster than light. And as it passed, its own field of negative space cancelled out a wake of real space as it went."

"That's a fine idea," said Rober. "You might as well postulate that as anything else. Furthermore, the cancellation energy derived might be used to drive the ship; and as far as the loss is concerned, a half mile of space is like bailing Lake Michigan with a teaspoon. The expanding universe is expanding much faster than mankind's puny efforts to trim it down at a half mile per trim."

"Why didn't you tell me this before instead of giving me a lot of guff?" roared Hanson.

"Because the shoe is on the other foot," snapped Rober. "This time you need help. And like the rest of us idiots who show our ignorance when we ask medical questions, you show your ignorance of physics by the damfool questions you ask. But I've done some piddling with Maculay's Equations and the guy has something real and something far above my head, too. Why not ask Maculay?"

"He's not available right now."

"Tough. Probably working on the streak itself, huh? Good thing. He'll get it ironed out. But if you can't get Maculay, get his assistant Redmond. Redmond is a young squirt, but he'll talk if he's urged."

"I've met Redmond."

"Um," grunted Rober. "So that's why you're calling me? Say! Redmond didn't scare you, did he?"

"Sure did."

"Don't let him; Maculay will keep him down."

Hanson decided that this was the

time to let the story out. "Redmond came here seeking Maculay. Maculay is on Venus having himself a vacation at my orders, and Redmond wanted him back."

"Wanted him back my foot! Redmond—if anything—wanted to be certain that Maculay was out of the way so that he could plunge into the secret files, using the emergency as reason. What are you doing about it?"

Hanson smiled to himself. "I've done it," he said. "I was just confirming some of my fears by calling you. I've just sent Miss Longacre to get him."

"Pray that she hurries," said Rober. "Redmond is the guy made from the same mold as the Sorcerer's Apprentice."

"You mean the kind of student we used to explain the process of making nitroglycerine to carefully because we knew they'd make it anyway, and blow hell out of themselves if they didn't violate the rules correctly?"

"More'n that," said Rober. "I said Sorcerer's Apprentice and I meant just that. Redmond is the kind of dope who would start manufacturing negative space and not be able to stop the process."

"Some one—or something—has done it."

"Yeah. But they—and Maculay alone on earth—knows what they're doing. And Maculay when I last saw him knew enough to leave it alone."

"Well, it's up to Ava Longacre."

"Hope she's successful."

Hanson remembered the girl's new attitude. "She'll get him," he said.

•

• **DOCTOR HANSON** WOULD not have been able to locate Maculay at all. But he had equipped Ava with the same set of ideas, plus the desire to catch up with the physicist wherever he might have gone; because she was thus equipped, Ava went where Maculay would—and had—gone.

Melaxis, Venus, was a mad mix-

ture of culture and frontier. It boiled with the same sort of teeming millions as New York City; it was a modern city, with white granite buildings, subways, and broad streets filled with racing traffic. But along these broad streets went the rough-shod colonists. They were, for the most part, cut of the same cloth as the colonists of Early America. Men who went to Venus to escape whatever particular hell they felt on earth. Men who objected to taxes, laws, responsibilities, oppressions, regimentations, legalities, religions, and the rest. They were a hardy lot, a bit quick on the trigger and quite inclined to stand upon their own personal integrity. They were just, but their justice was hard-boiled. A man was innocent—or he was guilty enough to get the works.

And it was among this churning metropolis that Ava Longacre landed to seek out Maculay.

Her progress from the spaceport to Maculay was not too arduous, since she knew about where to find him. Ava found a lavish hotel, dragged the bar, picked up a likely-looking character who wanted to visit a gambling hell. Enjoying a chance to show off before this interesting female, the character took her to a mid-town casino where, he told her, "Mac" was likely to be this night.

"Mac?" she asked.

"Mac is a gambler from way back," he told her. "Luckier than hell."

"Let's go," said Ava.

"That's Mac," he said. It was. Cliff Maculay was sitting before a large card table playing Red Dog. Before him he had a large pile of blue chips, and standing at his elbow watching the pile was a dark-eyed Venusian girl, who swayed languorously to the strains of the music coming from the dance floor next door.

"Would you like to make a hundred?" asked Ava.

"Who do you want killed?"

"Pick up that woman from Mac."

"What's the pitch?" he demanded; "a hundred ain't enough to get me killed."

Ava looked him in the eye. "This is the end of your line," she told him. "If you expect any fun tonight, you'll be better off trying for her, because you're out of a girl friend and Maculay is going to be swapping women shortly."

He looked at Ava, compared her against the Venusian girl in a brazen mental listing of their charms, and repeated a statement made earlier: "Luckier than hell, Mac."

Ava went over to the Red Dog table and stood so that her hip brushed Maculay's arm. Cliff looked up in annoyance, but the frown ceased as he saw her. "Hello," he said cheerfully.

It was obvious that he did not know her, and it was equally obvious that the Venusian girl did not care for the competition. "How are we doing?" she asked.

"Fine," he said.

"Yes, we are," said the Venusian girl, emphasizing her use of the 'we'.

"Cliff will do better now," said Ava.

"The lady knows me," chuckled Maculay.

"Every sharpshooter in Melaxis knows you," snapped the Venusian. "But do you know her?"

Ava laughed. Her voice was a pleasant contralto, throaty, suggestive as she said, "No, he doesn't know me. Yet. Which, darling, gives me an advantage, doesn't it?"

"Don't darling me—"

• A VA'S PREVIOUS ESCORT

Ava was a man of experience, possessor of a fresh hundred, and willing to play the game. His was the simple logic of the wolf; far better to have a woman you might be able to get than one who wanted someone else. Furthermore, he knew enough about human nature to toss a few cupfuls of oil on an already interesting fire. "See here," he said to Maculay, "what's the idea of making passes at my girl?"

Maculay laughed uproariously. He pushed his chair back and stood up,

alert. "If she were your girl she'd not be asking me how 'we're' doing," he told the man.

Housemen started to move, slowly, towards the scene of imminent battle.

Ava's escort was willing to start a fire, but he was in no way interested in getting his face pushed in to keep it burning. Yet he could not back out without some show of determination. "I suppose she's *your* girl?" he asked superciliously.

The housemen relaxed. Badingage and billingsgate made noise but it ruined no furniture. The contestants were talking; the kind of fight the housemen were prepared to stop was the kind that took the: "Who—Me?" "Yes, You," Whack! formula which left one of the contenders ready to avenge the lump on his jaw, and willing to use the furniture to do the job.

Cliff relaxed against the card table. "Maybe she is."

"Maybe she isn't!"

"Maybe she'd like to be."

"No accounting for taste."

Ava turned upon her escort coldly. "You haven't any taste. How would you recognize it?"

The Venusian girl knew the situation all too well; she had been looking out for herself for a number of years, and this project included making the best of an opportunity. Her hand strayed behind Maculay.

Then the peacemakers saw something that they were entirely unprepared to stop. Ava Longacre took Maculay by one hand and half-hurled him away from the table, unbalancing him across one hip. Cliff staggered forward—to be caught and supported by his possible assailant. But in the meantime Ava had gone to the edge of the table and had taken the Venusian girl by one wrist. She turned, ducked under the arm, and came up behind in a hammer-lock.

Chips from Maculay's stack dribbled out of the tortured fingers of the Venusian. Ava turned with the

girl and hurled her forward into the still-unbalanced men.

The Venusian screamed in anger.

Ava's former escort caught her and kept her from falling, and in doing so he let Maculay slip to one knee.

Someone yelled: "Fight!"

• **H**ELL BROKE LOOSE. A man clipped his neighbor because the other was luckier than he; a Venusian latched onto a hand full of chips from one of the tables and had his wrist broken by the owner of the chips who came down on the arm with a heavy fist. Chips flew through the air and rained down, and many, not caught in the fight, dropped to the floor to pick them up. They got into fights with other gleaners, and the melee spread like a crown fire in a piney woods. Critical mass had been reached, and the fission from civilized human beings to outraged primates spread throughout the room.

Cliff found an ornate chair and separated it to get the back-stringer for a club. The other side was clutched by Ava's escort, who plied it well. Ava came up between them clutching a small, wicked-looking stilleto and waving it viciously. Maculay slapped it out of her hand.

"Don't start *that*!" he snarled, caving in a likely looking head with the hunk of chair. He up-ended a table and used it as a protective wall, shoving it forward towards the door. He lost his club over another head and tossed the stub into the face of a third. He splattered the nose of a fourth all over his face, and trampled one fighting pair down to the floor. They paid no attention to him; they had their own private grievance.

Someone yelled: "Police!" and then the lights went out. Maculay steered another course from the door, back through the room full of flailing men and women who were trying now to extricate themselves and make the appearance of innocent bystanders.

Ava opened a door, and the light from inside spilled out over one of

the finest barroom shambles ever committed in a high-class gambling hell, where he who wore no evening clothes was not permitted.

Then they were inside.

"Damn," chuckled Maculay. "This is the first time I've ever been inside of a powder room."

"Like it?"

He looked at her. They had lost her former escort in the melee. They had lost some composure, too, and also whatever formality might have been expected.

"Not as well as I thought," he told her. "Where's the hell out?"

Ava pointed to a window.

They left via the window as the door opened. They landed in the gangway between the two buildings, raced for the alley, and ran into a burly man in uniform that stood there stolidly.

Maculay clipped him in a rolling block; the policeman had expected practically anything but a football rush. The pair went down, rolling.

The officer fired one shot at them as they headed into a side-gangway and through to the street beyond. Cliff whistled for a convenient taxicab; they piled into it and were off before the alarm sounded from their rear.

They repaired what damage they could in the taxicab, and carried the rest with them boldly through the finest hotel in Melaxis.

• **O**NCE IN MACULAY'S suite, Ava opened her handbag and rolled a horde of chips on the table.

Maculay roared with laughter. "Souvenirs," he chortled.

"Can't you cash 'em?"

"M'lady, you are an angel. You turned up just in time to create a diversion. I got out with a whole skin, anyway."

Maculay looked at her curiously. Her eyes were glowing with excitement; her face was flushed, and she bore that slight dishevelment that brings a beautiful woman down from the pedestal of showcase perfection

and makes a warm human of her.

She smiled cheerfully. "What do you mean?"

Cliff stepped to the small bar at the end of the room and mixed two very Herculean drinks before answering. Then he said—after Ava had tasted and approved: "They thought I had the cards marked. I didn't; I was playing a formula."

"But aren't formula players usual-ly losers?"

Maculay laughed. "Baby doll," he laughed, "when you've been trained by the best mathematician in the solar system, you remember the sequence of the cards, evolve a formula of probabilities regarding the shuffling, and then play them according to absolute mathematics. In Red Dog, if there's a Heart Six to beat, each and every card played changes the formula as it lands; if you know your mathematics, you can compute your chances about as well as the Interplanetary Life Insurance Company can compute your expectancy."

"But I spoiled your game."

"That game was ruined anyway."

"It was fun," said Ava, taking a fine pull at the drink.

"A nice shindy, m'lady. And far more better than the game they'd have played once they grabbed me."

"But where will we play tomorrow night?"

"Venus is full of places," chuckled Maculay. "Fact is, the evening is young. Wait'll I collect me a fresh shirt; and I'll have to forget the white jacket since it's a mess. But we can see a bit more Venusian Night Life."

"Done!"

Maculay emerged from the dressing room a few moments later. "By the way, m'lady, what's your name?"

"Ava Longacre."

"I'm—"

"I know. Cliff Maculay."

"Such is fame," sighed Cliff. "You know me?"

Ava nodded. "I've met you before," she said. A faint, subdued recollection of her previous meeting with Clifford Maculay stirred her. She recalled, very dimly, the upsurge of emotion, the pounding of

her heart, the complete relaxation of defensive mechanism. Something had been started but never finished, before. Now it was all past, gone, and a new day was yet to be born. "Someone gave me a message for you, but I've forgotten it."

"Maybe we can bring it back," chuckled Maculay. He took her by the arm and led her from the room.



HANSON had committed one pardonable error; pardonable because Hanson, for all of his years and his experience, was no worker of miracles, to whom nothing is hidden, and who can be called omniscient.

For all of his experience in wending his way through the hidden recesses of the labyrinth we call the human mind, Hanson did not know everything and would have been the first to admit this honestly. But he did know that the trouble with both Maculay and Ava Longacre laid in the subsurfaces of the conscious mind. Blocks, inhibitions, and fears instilled as a youth had driven Maculay to seek his excellence in mathematics as a goal rather than as the means to the normal goal of a happy, balanced life. In the filing-cabinet of the mind, however; in the sub-conscious mind of Clifford Maculay was all of the data of the life he should have led, held there subdued by the blocks of the conscious mind. Hanson had opened the doorway by removing these blocks, and he had done a fine job.

In much the same fashion he had removed the blocks and impediments from Ava Longacre's mind.

Both had suffered from too puritanical an upbringing. In the long distance that lies between white saint and black evil, there is a long dimension lying just below center that is the despair of reformers and do-gooders. This region contains

many people and many ideals that are *mal in dictu*. Some impractical reformer had decided, for instance, that liquor is to be abhorred; ergo it is against the desires of society for a man to take a drink. Just one. The idea is, of course, to create a race of saints and Little Lord Fauntleroy sweetness — which probably wouldn't last out the century since the desire to poke someone in the nose for stepping on your rights—or your toe—is the same belligerency that has made mankind fight its way up from the swamps to seek the stars.

Below this region of morals or ethics lies the *mal in facto* behaviour. It is bad in fact and practice to murder, steal, and lie.

Hanson had opened the minds of his pair to the enjoyment of the middle region after a short life of the stilted upper bracket. Like the swing of the pendulum, both Ava and Clifford had dropped about as far as they could go without getting into the truly evil region.

But the doctor's error was in not realizing that the human mind, once released of its inhibitions, can make a shrewd calculation. In the case of Ava Longacre, whose mental blocks would have rendered her undesirable to Cliff Maculay: when once released, the woman's mind reversed its tactics. Where the conscious mind had the balanced life distorted into undesirability, now her mind distorted into undesirability the more responsible way of living—because she was beginning to enjoy excitement.

All of her quiet life she had been suppressing the love of excitement; now released, Ava's Longacre's mind refused to consider the task she had been sent to do; once it was finished, she would be returned to the quiet, unexciting life that she no longer wanted.

So instead of employing her woman's wiles to involve Maculay and bring him back to earth where Hanson could get him to go back to work on his negative space, Ava was helping Cliff cut a wide, rosy-hued

swathe through the not-too-holy city of Melaxis.

They consumed a bit more alcohol than was necessary; they danced a bit more close together than would have been called proper at a Boston cotillion, and hazarded sums of money on the roll of a pair of dice or the turn of a card just for the thrill of high blood pressure.

IT WAS NEAR DAWN WHEN Ava lifted her head from Cliff's shoulder in the taxicab and wiped the lipstick from his cheek with a caressing forefinger. Cliff smiled down at her.

"Baby doll," he said, "let's get married or something."

Ava laughed lightly. "We'll get married—or nothing!"

The sun was above the horizon when Maculay carried his bride—now asleep—over the threshold of his hotel suite. It was late afternoon when the Maculays, man and wife, checked out of their hotel to take a honeymoon in the jungle cities of Venus.

And Hanson fumed and fretted because he had no word from Ava, and worried because he knew that Redmond was poring through Maculay's secret file of computations and beginning to unravel the data that would permit Redmond to create and establish negative space.

On the third day of such worrying, Hanson knew then he had miscalculated or over-stepped his reasoning. It was at that moment that Hanson did something that he had stoutly insisted that not even a man should do to his wife, or the reverse. Like reading another's mail, one did not paw through desk drawers nor inspect the corners of another's soul to see whether they concealed something. But Hanson went through the desk drawers of his nurse, attempting to learn how he had erred.

He came up with a small package, neatly tied in a very ornamental manner under the plain store-bag. The name on the fancy ribbon was that of a highly gilded women's shoppe where the salesgirls were

very beautiful, the silk very sheer, and the prices very high.

Hanson opened the package. It disgorged a petticoat and bra, through either of which the doctor could have read the telephone directory without his glasses. A scant concession to the custom that a woman should wear lingerie—for the sake of the custom but not necessarily for warmth, protection, fire or famine.

It might have been a gift.

It might have been her own.

It made no difference whether Ava had selected this daring set of scanties for herself or for a gift, wedding or Christmas. It displayed her taste, showed her subconscious desires.

"Damn!" exploded Hanson. "I've been working with a courtesan concealed behind an armor of white starch. Oh, brother!"

The doctor knew. Like two small streams, turned here and there by the minor hills and rocks of fate, they had been joined by Hanson into a flowing river, complete unto itself—themselves—which would go its way as it damn well pleased and overflow its banks to the ruination of anything in its path if it were constrained.

They would not be back until Maculay came back in one year—at which point Ava would subtly change, too, to conform with Maculay's desire.

This left Hanson helpless for one year, during which time Redmond would be working towards destruction with no barriers to his course. Hanson could express no more than an unfounded opinion of the fear of danger; he had neither prestige nor formal education in the field of high-gearred physics. The first objection he voiced would be taken with a nod by whomever official heard it, accepted for what it was: an opinion by a medical savant of seventy years regarding a problem in spacial physics. Then this opinion would be referred to Redmond for official regard. Hanson knew the answer without asking the question.

Redmond would laugh in scorn. Redmond would—

Hanson shook his head unhappily. Redmond would be a tough nut to crack. Belligerent, automatically biassed against the doctor, any attempt at hypnosis would be fought against most vigorously. Yet—

Jay Hanson had been in his business for a long time, but he had had no challenge such as this for years. And though old in body, he was young enough in mind to contemplate the mental challenge with a certain amount of interest.

He bought tickets and flew to the laboratory site where Maculay and his gang worked on spatial physics; he used his medical prestige as key to admittance, and found Redmond sitting at Maculay's desk checking a huge blueprint of a spacecraft.

• REDMOND LOOKED UP.

It was obvious that this little scene was one prepared by Redmond. Men who have visitors announced by secretaries, after having signed passes to let the visitor into the inner sanctum, after learning as he must have learned that the famous doctor had come to the huge laboratory site, should not look up from their desks in surprise.

Hanson understood; Redmond was morally right and ethically wrong. He had every moral right to take over Maculay's position during Maculay's absence; that was his appointed job. But ethically, he had no right to paw through Maculay's desk, and take from Maculay's secret files the information that Maculay had forbidden him to see. Now he was play-acting the part of a busy man who had all of the power he needed.

Redmond said: "Yes, Doctor Hanson?"

Hanson paid no attention to the blueprint. "I thought you'd like to know," he said softly, "that I've been unable to locate Maculay."

"Damn!" objected Redmond. Only one who understood what was in Redmond's ambitious mind would know that the disappointment was very false.

"So I came to tell you and also to be curious."

"Curiosity killed a cat," said Redmond.

The doctor laughed. "It's created more kittens than the cats it's killed. Is this still super-top secret or can you let an old man in on it?"

Redmond glowed inwardly at the chance to show off before the doctor. "According to the latest calculations," he said, "the generation of negative space by the force-fields of diagravitic force takes the form of a sphere. Obviously the proper shape for a spacecraft employing one of these generators would be spherical. But we are using a converted spacecraft of the torpedo shape, and I feel that—well, to generate a sphere large enough to enclose the spacecraft in one gulp would produce far too much power. So we are using two of them placed so that their spherical fields produce a pattern something like two equal-sized soap bubbles stuck together. The ship lies longwise through the centers of the circles, since the generators are in the ship, of course."

Hanson nodded. His head bobbed gently, in a measured motion. He was sitting with his back to the room, the window in front of him. He knew that the reflection of the window was in his glasses and that Redmond was watching this spot of light instead of watching the doctor's eyes. Redmond continued to watch as he spoke.

"Within a week we shall have it finished," said Redmond. "Then the stars shall be ours!"

Hanson continued to nod.

"Of course we have not tested the generators as yet. There is no known way of dissipating the energy they develop. Since the realized energy in this real space is sufficient to propel matter faster than the velocity of light, the outpouring of energy must be paradoxically many times the value of infinity."

Hanson continued to nod.

"This statement, of course, makes no sense," said Redmond, "because of one of the definitions of infinity—which is that number which is

larger than the number of all numbers. Here we treat infinity as a definite instead of an abstract, and by our equations we are permitted to multiply infinity by integer numbers and come up with a real answer—in a sort of abstract sense," said Redmond with a slight laugh. It was 'Our Equations' now instead of 'Maculay's Equations'.

• **H**ANSON CONTINUED TO nod and Redmond kept watching the spot on the Doctor's glasses.

"However," said Redmond, "the fact is that the power output does not exceed infinity at any time in this space. Not really, and therefore the paradox is answered. It is merely apparent, if you follow me. Actually, the spacecraft is not in real space and therefore it need not have an infinite amount of energy to reach the speed of light. However, there is no way of anchoring the generator on the planet while testing, nor of dissipating the energy. So the only way to test the set-up is to build a spacecraft and take off. If it does not work, we have the standard drivers to get us back."

Hanson kept on nodding. His neck was getting a bit stiff, but he could not stop.

"I've heard the argument that the generators may set up a self-propagating field," said Redmond. "This is so much bosh. The theory that the streak of energy that went through the solar system some weeks ago was the wake of a supervelocity spacecraft seems to be universal among the people who have studied the Equations. Ergo it stands to reason that no destruction of the universe will obtain. We are safe."

Hanson continued to nod.

Redmond smiled quietly.

The doctor said, "You've been working quite hard on this; you must be tired."

Redmond laughed sarcastically. "You've been working harder, Doc. If you've been expecting me to fall under your hypnotic spell with that head-bobbing business, you're getting a stiff neck and no results.

You're an old fool with an unfounded horror of anything new. You should view this sensibly; if another race can employ the spacedrive without ruining the universe, so can we. Now why not let busy men alone to work, while you go back to your mental cripples? Good day!"

Hanson fumed but it did no good. He was licked by animosity, disdain, and complete lack of sympathy. There was nothing to do but leave. And the doctor left, half-convinced that Redmond was right in assuming that if one galactic race could use the negative-space drive, another could do the same without fear. But he was only half-convinced; he wanted an opinion from Maculay. There was more here than met the eye.

Some other race knew the secret and were using it. The human race knew the secret and were about to try it. But the man who knew the real answers had gone into a tizzy because of some errata, or factor that was absolutely incompatible with life, liberty, and/or pursuit of happiness.

Hanson grunted. All too often in the case of violent disagreement, all parties were absolutely correct in their own mind, their own honest belief. Maybe this was similar.

One theoretical man feared the results from an abstract analysis of the computations. One mechanically-minded man could not appreciate the possible dangers, but was happy to follow the plans since completion meant fame and fortune for him. Both might be right. But...

• **HANSON** SHRUGGED unhappily; it was a bad spot to be in. Yet in the course of his seventy years many problems had seemed insoluble until some factor entered that changed the whole picture. And life itself must have seen many crises, in which the motion of a hand in the wrong direction would have caused the utter downfall of Humanity—or, he thought bitterly, *perhaps we are the result of an ill-moved hand of fate and might truly be great in mind as in work if some prehistoric ego-*

maniac hadn't kicked some unknown prop out from beneath us.

Perhaps, too, his mind told him, it could have been some half-baked do-gooder trying to help. As he, Jay Hanson, had attempted to help Maculay. The fault was as much his as it was Redmond's. More—Redmond could not help being what he was. Yet, neither could Hanson stand by and see a man go to pieces.

In any case it was not a proposition of fixing the blame; to hell with the blame and the responsibility. Fix it. Fix it. Fix it and forget the fumbling finger that fouled it.

Hanson swore. He was helpless.

Yet for all of his efforts, he believed that something would happen to avert this disaster. It hardly seemed possible that one man's act could destroy the universe. Man's total effort was so puny. Inconsequential. The ignorant savage could not destroy civilization.

But in the back of his mind. Hanson knew that a couple of lumps of plutonium in the hands of an ignorant savage could destroy life beyond the scope of the savage's experience; and mankind's scope was reaching to the stars.

Still fretting, and still hoping for the answer, he headed home.



HE WAS sitting in his office when the telephone rang on the following morning. Hanson answered it slowly, prepared to stall any patient off until he could regain some of his composure and his self-confidence.

"Hanson? Doc, this is Larimore."

"Larimore? Hi. What's up?"

"Doc, this job ain't good."

"What job?"

"The Black Slash."

"The what?"

Larimore chuckled. "If that yarn had turned up in the slush-pile, it would have been bounced with a re-

jection slip. It's not good, Doc. You've got no reason to write that bad, even though you've not written me anything for a couple of years; you don't forget how. But this job sounds like the half-baked efforts of a man convinced that he could write but who lacks the basic fundamentals of story construction. Now—"

"What in the devil are you talking about?" demanded Hanson.

"Didn't you send me a yarn called *The Black Slash*?"

"I—" Hanson paused. Cautiously, he said: "By Edward Lomax?"

"Naturally. That's your pen name. It—"

"Wasn't the job timely?"

"Doc, you ought to know by now that every time something new and frightening comes up, my desk is bombarded with a million stories about it. The best get taken up. That streak of energy a couple of weeks ago has brought fourteen stories so far, and some of them were damned good. But yours—Say, Doc, how come you went to Venus? I thought that you weren't allowed space-flight?"

Hanson paused and shook his head. Edward Lomax was his pen name. It was the pen name supplied to Maculay in the explanation as to why Cliff was in disfavor in the eyes of his fictitious uncle. And it was sort of natural, too, that Maculay would try to write about this thing. But Maculay, either as the reknowned Clifford Maculay, or young Cliff Maculay the black sheep, had never written a single line of fiction. Maculay's pedantic papers were full of equations, qualifications, cumbersome sentences, and inverted phrases—complete with the everlasting 'However' enclosed between commas.

Hanson laughed shortly.

People do not expect a man to step up to his first piano, sit himself down, and run through a faultless repertoire from Bach to Bebop. But these same people nod their heads at a new author's writing and think it is the first time he ever sat down to a typewriter—and then swear that they will do likewise as soon as they

get a couple of free hours. Maculay was no exception, plus the fact that Hanson had given his mind the false experience of writing to cover up many irregularities in Maculay's past. Maculay believed he could write and had been writing; actually he knew nothing of the techniques involved. It takes more than a burning desire to see your words in print; it takes at the very least some judgment as to which of your words you select for print plus the ability to produce them in logical sequence. Maculay had tried.

But above all, Maculay had offered a lead—provided unwittingly by Hanson himself. The doctor glowed inwardly, happily. He would now—

"You still there, Doc?"

"You bet. Where did that story come from, Larry?"

Larimore paused a moment. "A small town in the midlands of Venus a couple of hundred miles from Melaxis." Then he exploded. "Hey. Weren't you there? Why didn't you bring it back with you? What the hell goes on—?"

Hanson said, "Larimore, this is a long story and probably a better one than Maculay wrote. But it's important."

"I'm listening. Take off."

The doctor outlined the entire business over the telephone.

"My God," said Larimore. "Now what?"

"Now? It's easy. Send Maculay a special radiogram, addressed to Lomax, stating that Modern Pictures wants the script for a full-length moving picture at some fabulous price providing they can hire the author to rewrite the thing into novel length. You have an option check for five thousand dollars which will expire within ten days if the author is not present in person at your office before that time."

"I get it. 'Twill be done."

Hanson sat back, relieved; this was the answer he was hoping for. It had come and now all he had to do was to husband his strength until Maculay could get home. Because when Maculay arrived, there would be a big job to do.

• **H**E SPENT HIS TIME working slowly, resting often. He went to Larimore's office and fiddled it with his equipment, on the off-chance that Maculay might be hard to handle. Hanson did not think Maculay would be difficult to re-convert since the true personality was submerged by the false character by mere hypnotic suggestion. It should be remarkably easy. But the doctor wanted to take no chances.

He read Maculay's sorry attempt at fiction. It was not good fiction but it interested Hanson because there was so much fact concealed in its descriptive passages. Maculay, unable to think too deeply about the negative space concept, or real and unreal space, and variable-matrix wave mechanics, had treated the whole scientific formulation with a touch of the ridiculous. Just as Cliff, upon hearing of the streak of energy, had laughingly included it in a 'story' because he was hypnotically unfitted to treat his opinion as anything but fiction-fantasy, he was again concealing the truth behind a thin disguise. It was all there.

All there, Hanson saw with a sour finality, but the solution. Maculay had pulled the old gag of having the fabulous machine totally destroyed, complete with its secret. A poor gag, and unfitted for modern writing, especially unfitted for application to fact. For, in fact, this was not a story; it was the truth, told by a man who must tell it as fiction since the truth literally hurt him. But there was no true solution, and once the negative-gravitic generators were started, the unreal root of negative space would spread to engulf the universe.

This 'story' of Maculay's convinced—or rather pinned the last doubt down—Hanson that his guesswork was right. But handing such a story to any official as true data would get the doctor nothing but a horselaugh—at the least—and possibly a trip to the looney-bin for observation.

However, he would have the truth at hand soon enough. Maculay would know what steps to take.

Even if Maculay ordered everything to stop, while the answer was found.

• **H**ANSON WAS WORKING in Larimore's office when Maculay came in with his bride.

The doctor looked at them both; he nodded affably.

"Doc!" roared Maculay cheerfully. "What in hell are you doing here?"

"Come to kiss the bride," said Hanson. "And she looks lovely enough to kiss."

"Go ahead," said Maculay; "I'll permit you eight seconds."

Hanson smiled at Ava, but shook his head. "I've got one more thing on my mind," he said quietly. "Cliff, what do you know of Maculay's Equations?"

"He's an uncle of mine," started Maculay. "He came up against a tough one. He found a way to exceed the speed of light—but doing it would destroy universal space by a sustained and spreading cancellation. It—"

"Maculay, what would you do if you were *The Clifford Maculay*?"

"Go fishing."

Hanson touched a button at his elbow. There was a soundless flash of brilliant light as the photoflash bulb planted in the desk lamp flared. Then as Maculay stood, tense with shock, Hanson said, in a forceful tone: "Clifford Maculay, the hypnotic suggestion that I gave you before must cease. I order it to stop; I order you released. You are once more Doctor Clifford Maculay, who must—"

The jovial smile faded from Maculay's face. The twinkle in his eye changed to a calculating glitter, and the lines of Maculay's face hardened. "Hanson," he snapped, "what has been going on?"

"You've been on vacation," said the doctor. "And while you were traipsing all over Venus, Redmond has opened your secret file and is starting to build a supersonic spacecraft. You must put a stop to it."

Maculay looked startled for a moment. Then he said: "Redmond is a pompous sort of juvenile jackass,

I admit, but he isn't that stupid."
"I've seen his installation."

Maculay shrugged. "I'm not a jealous man, Doc. I've had my day; I've done my work; I've laid my cornerstone. I've even been stumped. Now if Redmond can solve the problem that had me licked, I'll be the last man on earth to deny him his triumph."

"Clifford, from all I've heard about this, total destruction will result if any man energizes a volume of negative space."

"Quite right," said Maculay. And as he said it, his eyes clouded and he winced gently.

"Redmond has added nothing to your calculations."

Maculay stood up with a dry smile. "As a physician you are Number One on earth. As a psychiatrist you are tops. I know what you've done and it's been good. I hope," he added slyly, "that she likes me as well this way as she did the other way—or can you change her too? Or," he continued with growing comprehension, "is it 'change her back, too?'"

"Back."

"Good. So as a witch doctor you're tops in any jungle. But as a physicist, you don't know a gravitino from a vocal fricative."

"Meaning?"

"Meaning that before any judgement is cast, I shall have to see the evidence."

Hanson stood up. "So it's back to the laboratory site."

Maculay nodded, held out an arm which Ava took happily, and then he said: "And from the lab site to the stars, Doc."

Hanson grumbled: "Or total extinction."

Maculay did not hear him. He was looking down at Ava. "Doc," he said slowly, "you'd better come along. Snooky, here, needs to be slowed down to my level and you're the guy to do it."

Hanson did not tell Maculay that Ava's reconversion would take no longer than his own; the doctor wanted to be in at the end of this,

good or bad. He merely nodded, then waited while Maculay made arrangements to fly to the laboratory site. His name worked wonders; an official plane was being warmed up by the time they left Larimore's office and headed towards the airport.

• **R**EDMOND GREETED them with a hearty smile.

Only Hanson, who had every reason to doubt Redmond's happiness at Maculay's return, saw the falsity of the greeting. Redmond, of course, was on a spot; yet, the man was convinced of his own correct reasoning, and this justified his acts. Redmond's greeting was less hearty to Hanson; obviously Redmond would have preferred to deal with Maculay alone. Having the doctor there might be awkward, for Maculay might be talked into belief, whereas Hanson was more than likely to ignore the words and their import, and deal entirely upon whether the sayer of the words was lying or telling the truth.

Redmond believed in a swift attack.

Once the original greeting was over, he plunged in: "We spent some time trying to locate you as soon as it became evident that the energetic streak that went through the solar system produced the sort of radiation that we had been theorizing over," said Redmond. "Lacking Maculay, I was asked to open your secret file and see what could be made of it."

"You discovered the trouble, then?"

"Yes."

Cliff relaxed. He had been under a strain visible only to Hanson; the doctor nodded. When a man is in a mental tizzy because he's hit upon an insoluble dilemma, it makes no difference who solves it. The weight of strain went out of Maculay; the mental run-around that had kept him fighting to the exclusion of everything else was gone. The couple of months of rest had done wonders; now the final true release from strain added to it. Give Maculay another few months of absolute freedom

from strain, and Cliff would be ready to take on the world with a hand tied behind him.

But Hanson knew there was trouble ahead, for, unless he were very incorrect, Redmond was bulling it through and—

"You've discovered the error?"

Redmond laughed. "Your equations showed that negative space cancelled real space."

"Yes. And I could figure no other way."

"This is true in limited case," said Redmond. "The consensus of opinion is that the streak of energy was nothing more than the mutual destruction of a cylinder of space being cancelled by the passage of a spacecraft enveloped in a spherical field of negative space. Upon working with that theory in mind and applying other bits of true evidence gained from the readings and measurements of the streak, we have solved your dilemma."

"Let's see our equations," suggested Maculay.

"Rather," said Redmond, "let's visit the spacecraft."

"All right."

Hanson said: "Are you certain that you're not assuming too much?"

"Meaning?" asked Redmond coldly.

"You are basing everything on the fact that an alien spacecraft passed through here. How do you know?"

Redmond laughed in a superior manner. "Since matter cannot exceed the velocity of light without being encased in a volume of unreal space—and since a volume of unreal space would kick up the same sort of wake as we measured—we can assume that some intelligence has developed negative space and is using it. Negative space, Doctor Hanson, is not to be found free in nature."

"But you've really added nothing to Maculay's Equations."

"We've proven by observation that the sustained destruction of the universe will not obtain; we'll prove it, too."

Hanson snorted. "This isn't a game of bridge," he said; "you're not bid-

ding a grand slam just to see if you can make it without the ace of trump."

"But we know that it has been done. Nothing more need hold us up; we know!"

Hanson added another page to his mental notes regarding Redmond. Frustrated genius, second rater really, Redmond was the type of man who had always been protected against danger. In the course of his life, he had never faced the consequences of one of his own acts; therefore he fully believed that every time he was about to step off of the deep end, some Divine Providence would save him. If Redmond were permitted to do as he wanted to do, it was "Sign to Redmond" that he was on the right track. Some people call it superstition; some call it intuition; some call it foolishness. To Redmond, it was a sort of Fate.

• **MACULAY STOOD UP AND** led the way to the doorway.

"Let's look at this," he said.

"Cliff," said Hanson, "nothing has changed since you went away. Real and unreal space are still mutually destructive. And if you couldn't figure it out, no other man on earth could."

Redmond said, "True, at that time. But we've had extra evidence to work on."

"But—"

"Forget it," said Redmond; "we know what we're talking about."

Maculay entered the control room of the ship first. He looked it over with interest, then nodded. "Everything is in ship-shape fashion," he said.

"We could start tomorrow if we had to."

Maculay looked at the controls that projected side by side on the polished black panel labelled *Upper* and *Lower*.

"Dunno," said Maculay thickly.

Hanson watched him carefully. "Cliff," he said quietly, "you knew about the streak of energy, too. If that were the answer, you'd have come out of your mental tizzy."

Maculay turned to Redmond. "What means have you to prevent the sustained reaction?"

Redmond shook his head. "We don't need any. If another race can do it—"

"Don't be an idiot! Just because one race makes iron steamships it is no sign that iron floats on water."

"But it stands to reason—"

"You'd bank your life on it?"

"Yes."

Cliff Maculay took the two handles, one in each hand. His eyes glazed a bit, and he laughed uncertainly. "Maybe the creation of the universe was started by some fool who created negative space," he said thickly. "You simple idiot, this is exactly the danger that almost drove me nuts; you haven't solved a thing!"

Maculay stood there, watching Redmond. Then the frown left his face, and his body tightened. His eyes lost the hard glitter and took on a luminous air, which became half-humorous and half cynical as the corners of his mouth quirked up.

Hanson took a deep breath. Maculay the physicist had become Cliff Maculay the hell-raiser in just that short a time, because he was once more faced with the insoluble.

"No!" yelled Hanson.

But Maculay laughed. "Might as well wreck it," he jeered. "Better to wreck this fool's work than destroy the universe. Damn idiot, Clifford Maculay. Better—"

Maculay slammed the *Upper* switch to the right.

"—let the ne'er-do-well foul it right!"

Maculay slammed the *Lower* switch to the left.

There was a perceptible shift in the frame of reference, a hiatus in

the solidity of things, like the rug slipping on the polished floor, like the fancy movable steps in the Fun House, like the bottom of the quicksand lake, like space itself being warped.

Then Arcturus passed the nearby viewpoint in a single flash of blue-white, and seconds afterwards a second star flashed, then a third.

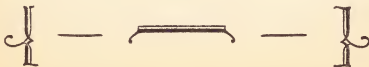
"The backward sort," chortled Maculay. He was neither Maculay the Physicist now, nor was he Maculay the hell-raiser; he was a glad mixture of both. "It came to me," he told Hanson, "just like *That!*"

"But—?"

"Easy. Easy. The output from the upper generator creates negative space. But before it can establish an expanding field, the output of the lower generator nullifies it. For the lower generator is making a field of positive space equal to the force from above. Take unity. Add unity and you have two. Cancel one unity and you have unity—plus a spacedriver!"

• **THIRTY THOUSAND LIGHT** years away, a recorder wiggled, a bell rang, and a sentient creature came out of a quiet complacency with a roar. Then came the clangor of a huge alarm and other creatures came tumbling into the huge room. They watched the recorder anxiously; then as it levelled off they left, slowly. Six remained; the others got into a small spacecraft and took off. There would be no nova for the suppression squad to extinguish; all that was needed was for the safety squad to go there and teach newcomers how not to play with fire.

•





Frome and Elena scrambled up the rope ladder...

ULTRASONIC GOD

FEATURE NOVELET OF WORLDS TO COME

By L. Sprague de Camp

(author of "Wide Open World")

Adrian Frome had to play the hero's role, but he didn't want the hero's reward for it. Not with a female missionary ...



ADRIAN FROME regained consciousness to the sound of harsh Dzlieri consonants. When he tried to move, he found he was tied to a tree by creepers, and that the Vishnuvan centaurs were cavorting around him, fingering weapons and gloating.

"I think," said one, "that if we skinned him carefully and rolled him in salt ..."

Another said: "Let us rather open his belly and draw forth his guts little by little. Playing is too uncertain; Earthmen often die before one is half done."

Frome saw that his fellow-surveyors had indeed gone, leaving nothing but two dead zebras (out of the six they had started out with) and some smashed apparatus. His head ached abominably. Quinlan must have conked him from behind while Hayataka was unconscious, and then

packed up and shoved off, taking his wounded chief but leaving Frome.

The Dzlieri yelled at one another until one said: "A pox on your fancy slow deaths! Let us stand off and shoot him, thus ridding ourselves of him and bettering our aim at once. Archers first. What say you?"

The last proposal carried. They spread out as far as the dense vegetation allowed.

The Dzlieri were not literally centaurs in the sense of looking like handsome Greek statues. If you imagine the front half of a gorilla mounted on the body of a tapir you will have a rough idea of their looks. They had large mobile ears, a caricature of a human face covered with red fur, four-fingered hands, and a tufted tail. Still, the fact that they were equipped with two arms and four legs apiece made people who found the native name hard call

●
The Galton whistle is a useful instrument; dogs can hear it, but men can't. And any useful instrument can be used as a weapon when the circumstances are right!
●

them centaurs, though the sight of them would have scared Phidias or Praxiteles out of his wits.

"Ready?" said the archery enthusiast. "Aim low, for his head will make a fine addition to our collection if you spoil it not."

"Wait," said another. "I have a better thought. One of their missionaries told me an Earthly legend of a man compelled by his chief to shoot a fruit from the head of his son. Let us therefore ..."

"No! For then you will surely spoil his head!" And the whole mob was yelling again.

Lord, thought Frome, how they talk! He tested his bonds, finding that someone had done a good job of tying him up. Although badly frightened, he pulled himself together and put on a firm front: "I say, what are you chaps up to?"

They paid him no heed until the William Tell party carried the day and one of them, with a trader's stolen rifle slung over his shoulder, approached with a fruit the size of a small pumpkin.

Frome asked: "Does that gun of yours shoot?"

"Yes," said the Dzlieri. "I have bullets that fit, too!"

Frome doubted this, but said: "Why not make a real sporting event of it? Each of us put a fruit on our heads and the other try to shoot it off?"

The Dzlieri gave the gargling sound that passed for laughter. "So you can shoot us, eh? How stupid think you we are?"

Frome, thinking it more tactful not to say, persisted with the earnestness of desperation: "Really, you know, it'll only make trouble if you kill me, whereas if you let me go ..."

"Trouble we fear not," roared the fruit-bearer, balancing the fruit on Frome's head. "Think you we should let go such a fine head? Never have we seen an Earthman with yellow hair on head and face."

Frome cursed the coloration that he had always been rather proud of hitherto, and tried to compose more arguments. It was hard to think in

the midst of this deafening racket.

The pseudo-pumpkin fell off with a thump. The Dzlieri howled, and he who had placed it came back and belted Frome with a fullarmed slap across the face. "That will teach you to move your head!" Then he tied it fast with a creeper that went over the fruit and under Frome's chin.

Three Dzlieri had been told off to loose the first flight.

"Now look here, friends," said Frome, "you know what the Earthmen can do if they—"

T-twunk! The bowstrings snapped; the arrows came on with a sharp whistle. Frome heard a couple hit. The pumpkin jerked, and he became aware of a sharp pain in his left ear. Something sticky dripped onto his bare shoulder.

The Dzlieri shouted: "Etsnoten wins the first round!"

"Was that not clever, to nail his ear to the tree?"

"Line up for the next flight!"

"Hoy!" Hooves drummed and more Dzlieri burst into view. "What is this?" asked one in a crested brass helmet.

They explained, all jabbering at once.

"So," said the helmeted one, whom the others addressed as Mishinatven. (Frome realized that this must be the insurgent chief who had seceded from old Kamatobden's rule. There had been rumors of war ...) "The other Earthman knocked him witless, bound him, and left him for us, eh? After slaying our fellows there in the brush?" He pointed to the bodies of the two Dzlieri that had fallen to the machine-gun in the earlier skirmish.

● **M**ISHINATVEN THEN addressed Frome in the Brazilo-Portuguese of the spaceways, but very brokenly: "Who—you? What—name?"

"I speak Dzlieri," said Frome. "I'm Frome, one of the survey-party from Bembom. Your folk attacked us without provocation this morning as we were breaking camp, and wounded our chief."

"Ah. One of those who bounds and measures our country to take it from us?"

"No such thing at all. We only wish ..."

"No arguments. I think I will take you to God. Perhaps you can add to our store of the magical knowledge of the Earthmen. For instance, what are these?" Mishinatven indicated the rubbish left by Quinlan.

"That is a thing for talking over distances. I fear it's broken beyond repair. And that's a device for telling direction, also broken. That—" (Mishinatven had pointed to the radar-target, an aluminum structure something like a kite and something like a street-sign) "is—uh—a kind of totem-pole we were bringing to set up on Mount Ertma."

"Why? That is my territory."

"So that by looking at it from Bombom with our radar—you know what radar is?"

"Certainly; a magic eye for seeing through fog. Go on."

"So you see, old fellow, by looking at this object with the radar from Bombom we could tell just how far and in what direction Mount Ertma was, and use this information in our maps."

Mishinatven was silent, then said: "This is too complicated for me. We must consider the deaths of my two subjects against the fact that they were head-hunting, which God has forbidden. Only God can settle this question." He turned to the others. "Gather up these things and bring them to Amnairad for salvage." He wrenched out the arrow that had pierced Frome's ear and cut the Earthman's bonds with a short hooked sword like an oversized linoleum-knife. "Clamber to my back and hold on."

Although Frome had ridden zebras over rough country (the *Viagens Interplanetarias* having found a special strain of Grevy's zebra, the big one with narrow stripes on the rump, best for travel on Vishnu where mechanical transport was impractical) he had never experienced anything like this wild bareback ride. At least he was still alive, and

hoped to learn who "God" was. Although Mishinatven had used the term *gimoa-brtsqun*, "supreme spirit," the religion of the Dzlieri was demonology and magic of a low order, without even a centaur-shaped creator-god to head its pantheon. Or, he thought uneasily, by "taking him to God" did they simply mean putting him to death in some formal and complicated manner?

Well, even if the survey was washed up for the time being, perhaps he could learn something about the missing missionary and the trader. He had come out with Hayataka, the chief surveyor, and Pete Quinlan, a new man with little background and less manners. He and Quinlan had gotten on each other's nerves, though Frome had tried to keep things smooth. Hayataka, despite his technical skill and experience, was too mild and patient a little man to keep such an unruly subordinate as Quinlan in line.

• FIRST THE DZLIERI GUIDE

had run off, and Quinlan had begun making homesick noises. Hayataka and Frome, however, had agreed to try for Mount Ertma by travelling on a magnetic bearing, though cross-country travel on this steaming soup-kettle of a planet with its dense jungle and almost constant rain was far from pleasant.

They had heard of the vanished Earthfolk yesterday when Quinlan had raised Comandante Silva himself on the radio: "...and when you get into the Dzlieri country, look for traces of Sirat Mongkut and Elena Millan. Sirat Mongkut is an entrepreneur dealing mainly in scrap-metals with the Dzlieri, and has not been heard of for a Vishnuvan year. Elena Millan is a Cosmotheist missionary who has not been heard of in six weeks. If they're in trouble, try to help them and get word to us..."

After signing off, Quinlan had said: "Ain't that a hell of a thing, now? As if the climate and bugs and natives wasn't enough, it's hunting a couple of fools we are. What was

that first name? It don't sound like any Earthly name I ever heard."

Hayataka answered: "Sirat Mongkut. He's a Thai—what you would call a Siamese."

Quinlan laughed loudly. "You mean a pair of twins joined together?"

Then this morning a party of Dzlieri, following the forbidden old custom of hunting heads, had rushed the camp. They had sent a javelin through both Hayataka's calves and mortally wounded the two zebras before Frome had knocked over two and scattered the rest with the light machine-gun.

Quinlan, however, had panicked and run. Frome, trying to be fair-minded, couldn't blame the lad too much; he'd panicked on his first trail-trip himself. But when Quinlan had slunk back, Frome, furious, had promised him a damning entry in his fitness report. Then they had bound Hayataka's wounds and let the chief surveyor put himself out with a trance-pill while they got ready to retreat to Bembom.

Quinlan must have brooded over his blighted career, slugged Frome, and left him for the Dzlieri, while he hauled his unconscious supervisor back to Bembom.



AFTER A couple of hours of cross-country gallop, the party taking Frome to Amnairad began to use roads. Presently they passed patches of clearings where the Dzlieri raised the push-ball-sized lettuce-like plants they ate. Then they entered a "town", which to human eyes looked more like a series of corrals with stables attached. This was Amnairad. Beyond loomed Mount Ertma, its top hidden in the clouds. Frome was surprised to see a half-dozen zebras in one of the inclosures; that meant men.

At the center of this area they approached a group of "buildings"—

inclosed structures made of poles with sheets of matting stretched between them. Up to the biggest structure the cavalcade cantered. At the entrance a pair of Dzlieri, imposing in helmets, spears, and shields, blocked the way.

"Tell God we have something for him," said Mishinatven.

One of the guards went into the structure and presently came out again. "Go on in," he said, "Only you and your two officers, Mishinatven. And the Earthman."

As they trotted through the maze of passages, Frome heard the rain on the matting overhead. He noted that the appointments of this odd place seemed more civilized than one would expect of Dzlieri, who, though clever in some ways, seemed too impulsive and quarrelsome to benefit from civilizing influences. They arrived in a room hung with drapes, of native textiles and decorated with groups of crossed Dzlieri weapons: bows, spears, and the like.

"Get off," said Mishinatven. "God, this is an Earthman named Frome we found in the woods. Frome, this is God."

Frome watched Mishinatven to see whether to prostrate himself on the pounded-clay floor or what. But as the Dzlieri took the sight of his deity quite casually, Frome turned to the short, burly man with the flat Mongoloid face, wearing a pistol and sitting in an old leather arm-chair of plainly human make.

Frome nodded, saying: "Delighted to meet you, God old thing. Did your name used to be—uh—Sirat Mongkut before your deification?"

The man smiled faintly, nodded, and turned his attention to the three Dzlieri, who were all trying to tell the story of finding Frome and shouting each other down.

Sirat Mongkut straightened up and drew from his pocket a small object hung round his neck by a cord: a brass tube about the size and shape of a cigarette. He placed one end of this in his mouth and blew into it, his yellow face turning pink with effort. Although Frome heard

no sound, the Dzlieri instantly fell silent.

Sirat put the thing back in his pocket, the cord still showing, and said in Portuguese: "Tell us how you got into that peculiar predicament, Senhor Frome."

• **UNABLE TO THINK OF** any lie that would serve better than simple truth, Frome told Sirat of his quarrel with Quinlan and its sequel.

"Dear, dear," said Sirat. "One would almost think you two were a pair of my Dzlieri. I am aware, however, that such antipathies arise among Earthmen, especially when a few of them are confined to enforced propinquity for a considerable period. What would your procedure be if I released you?"

"Try to beat my way back to Bem-bom, I suppose. If you could lend me a Grevy and some rations . . ."

Sirat shook his head, still smiling like a Cheshire-cat. "I fear that is not within the bourne of practicability. But why are you in such a hurry to get back? After the disagreement of which you apprised me, your welcome will hardly be fraternal; your colleague will have reported his narrative in a manner to place you in the worst possible light."

"Well, what then?" said Frome, thinking that the entrepreneur must have swallowed a dictionary in his youth. He guessed that Sirat was determined not to let him go, but on the contrary might want to use him. While Frome had no intention of becoming a renegade, it wouldn't hurt to string him along until he learned what was up.

Sirat asked: "Are you a college-trained engineer?"

Frome nodded. "University of London; Civil Engineering."

"Can you run a machine-shop?"

"I'm not an expert machinist, but I know the elements. Are you hiring me?"

Sirat smiled. "I perceive you usually anticipate me by a couple of steps. That is, roughly, the idea I had in mind. My Dzlieri are suffi-

ciently clever metal-workers but lack the faculty of application; moreover I find it difficult to elucidate the more complicated operations to organisms from the pre-machine era. And finally, Senhor, you arrive at an inopportune time, when I have projects under way news of which I do not desire to have broadcast. Do you comprehend?"

Frome at once guessed Sirat was violating Interplanetary Council Regulation No. 368, Section 4, Subsection 26, Paragraph 15, which forbade imparting technical information to intelligent but backward and warlike beings like the Dzlieri without special permission. This was something Silva should know about. All he said, though, was: "I'll see what I can do."

"Good." Sirat rose. "I will patch up your ear and then show you the shop myself. Accompany us, Mishin-atven."

The Siamese led the way through the maze of mat-lined passages and out. The "palace" was connected by a breezeway with a smaller group of structures in which somebody was banging on an anvil; somebody was using a file; somebody was pumping the bellows of a simple forge.

In a big room several Dzlieri were working on metal parts with home-made tools, including a crank-operated lathe and boringmill. In one corner rose a pile of damaged native weapons and tools. As his gaze roamed the room, Frome saw a rack holding dozens of double-barrelled guns.

Sirat handed one to Frome. "Two-centimeter smooth-bores, of the simplest design. My Dzlieri are not yet up to complicated automatic actions, to say nothing of shock-guns and paralyzers and such complex weapons. That is why the guns they expropriate from traders seldom remain long in use. They will not clean guns, nor believe that each gun requires appropriate ammunition. Therefore the guns soon get out of order and they are unable to effect repairs. But considering that we are

not yet up to rifling the barrels, and that vision is limited in the jungle, one of these with eight-millimeter buckshot is quite as effective as an advanced gun.

"Now," he continued, "I contemplate making you my shop foreman. You will first undergo a training-course by working in each department in turn for a few days. As for your loyalty—I trust to your excellent judgment not to attempt to depart from these purlieus. You shall start in the scrap-sorting department today, and when you have completed your stint, Mishinatven will escort you to your quarters. As my Dzlieri have not yet evolved a monetary economy, you will be recompensed in copper ingots. Lastly, I trust I shall have the gratification of your companionship for the evening repast tonight?"

THE SCRAP-SORTING room was full of piles of junk, both of human and of native origin. Idznamen, the sorter, harangued Frome on such elementary matters as how to tell brass from iron. When Frome impatiently said: "Yes, yes, I know that," Idznamen glowered and went right on. Meanwhile Frome was working up a state of indignation. An easy-going person most of the time, he was particular about his rights, and now was in a fine fury over the detention of him, a civil servant of the mighty *Via gens*, by some scheming renegade.

During the lecture Frome prowled, turning over pieces of junk. He thought he recognized a motor-armature that had vanished from Bembom recently. Then there was a huge copper kettle with a hole in its bottom. Finally he found the remains of the survey-party's equipment, including the radar-target.

Hours later, tired and dirty, he was dismissed and taken by Mishinatven to a small room in this same building. Here he found a few simple facilities for washing up. He thought he should mow the incipient yellow beard in honor of dining with God, but Mishinatven did not know what a razor was. The Dzlieri hung

around, keeping Frome in sight. Evidently Sirat was taking no chances with his new associate.

At the appointed time, Mishinatven led him to the palace and into Sirat's dining-room, which was fixed up with considerable elegance. Besides a couple of Dzlieri guards, two people were there already: Sirat Mongkut and a small dark girl, exquisitely formed but clad in a severely plain Earthly costume—much more clothes than human beings wore on this steaming planet.

Sirat said: "My dear, allow me to present Senhor Adrian Frome; Senhor, I have the ineffable pleasure of introducing Senhorita Elena Millan. Will you partake of a drink?" he added, offering a glass of *moikhada*.

"Righto," said Frome, noticing that Sirat already held one but that Miss Millan did not.

"It is contrary to her convictions," said Sirat. "I hope to cure her of such unwarranted extremism, but it consumes time. Now narrate your recent adventures to us again."

Frome obliged.

"What a story!" said Elena Millan. "So that handsome North European coloring of yours was almost your death! You Northerners ought to stick to the cold planets like Gan-*esha*. Not that I believe Junqueiros's silly theory of the superiority of the Mediterranean race."

"He might have a point as far as Vishnu is concerned," said Frome. "I do notice that the climate seems harder on people like Van der Graacht and me than on natives of tropical countries like Mehtalal. But perhaps I'd better dye my hair black to discourage these chaps from trying to collect my head as a souvenir."

"Truly I regret the incident," said Sirat. "But perhaps it is a fortunate misfortune. Is there not an English proverb about ill winds? Now, as you observe, I possess a skilled mechanic and another human being with whom to converse. You have no conception of the *ennui* of seeing nobody but extraterrestrials."

● **FROME** WATCHED THEM closely. So this was the missing missionary! At least she had a friendly smile and a low sweet voice. Taking the bull by the horns he asked: "How did Miss Millan get here?"

Elena Millan spoke: "I was travelling with some Dzlieri into Mishinatven's territory, when a monster attacked my party and ate one of them. I should have been eaten, too, had not Mr. Sirat come along and shot the beast. And now..."

She looked at Sirat, who said with his usual smile: "And now she finds it difficult to accustom herself to the concept of becoming the foundress of a dynasty."

"What?" said Frome.

"Oh, have I not enlightened you? I am imbued with considerable ambitions—exalted, I think, is the word I want. Nothing that need involve me with Bombom, I trust, but I hope before many years have elapsed to bring a sizable area under my sovereignty. I already rule Mishinatven's people for all practical purposes, and within a few weeks I purpose to have annexed old Kamatobden's as well. Then for the tribe of Romeli living beyond Bombom..." He referred to the other intelligent species of the planet, six-limbed ape-like beings who quarreled constantly with the Dzlieri.

"You see yourself as a planetary emperor?" said Frome. This should certainly be reported back to his superiors at Bombom without delay!

Sirat made a deprecating motion. "I should not employ so extravagant a term—at least not yet. It is a planet of large land area. But—you comprehend the general idea. Under unified rule I could instill real culture into the Dzlieri and Romeli, which they will never attain on a basis of feuding tribes." He chuckled. "A psychologist once asserted that I had a power-complex because of my short stature. Perhaps he was correct; but is that any pretext for neglecting to put this characteristic to good use?"

"And where does Miss Millan come in?" asked Frome.

"My dear Frome! These primitives can comprehend the dynastic principle, but are much too backward for your recondite democratic ideals, as the failure of attempts to teach the representative government has amply demonstrated. Therefore we must have a dynasty, and I have elected Miss Millan to assist me in founding it."

Elena's manner changed abruptly and visibly. "I never shall," she said coldly. "If I ever marry, it will be because the Cosmos has infused my spiritual self with a Ray of its Divine Love."

Frome choked on his drink, wondering how such a nice girl could talk such tosh.

Sirat smiled. "She will alter her mind. She does not know what is beneficial for her, poor infant."

Elena said: "He walks in the darkness of many lives' accumulated karma, Mr. Frome, and so cannot understand spiritual truths."

Sirat grinned broadly. "Just a benighted old ignoramus. I suppose, my love, you would find our guest more amenable to your spiritual suasion?"

"Judging by the color of his aura, yes." (Frome glanced nervously about.) "If his heart were filled with Cosmic Love, I could set his feet on the Seven-Fold Path to Union with the Infinite."

● **FROME** ALMOST DECLARED he wouldn't stand by and see an Earth-woman put under duress—not while he had his health—but thought better of it. Such an outburst would do more harm than good. Still, Adrian Frome had committed himself mentally to helping Elena, for while he affected a hardboiled attitude towards women, he was secretly a sentimental softhead towards anything remotely like a damsel in distress.

Sirat said: "Let us discuss less rarefied matters. How are affairs proceeding at Bombom, Mr. Frome? The information brought hither by my Dzlieri is often garbled in transit."

After that the meal went agreeably

enough. Frome found Sirat Mongkut, despite his extraordinarily pedantic speech, a shrewd fellow with a good deal of charm, though obviously one who let nothing stand in his way. The girl, too, fascinated him. She seemed to be two different people—one, a nice normal girl whom he found altogether attractive; the other, a priestess of the occult who rather frightened him.

When Sirat dismissed his guests, a Dzlieri escorted each of them out of the room. Mishinatven saw to it that Frome was safely in bed (Frome had to move the bed a couple of times to avoid the drip of rain-water through the mat ceiling) before leaving him. As for Adrian Frome, he was too tired to care whether they mounted guard over him or not.



DURING THE ensuing days Frome learned more of the workings of the shop and revived his familiarity with the skills that make a metal-worker. He also got used to being tailed by Mishinatven or some other Dzlieri. He supposed he should be plotting escape, and felt guilty because he had not been able to devise any clever scheme for doing so. Sirat kept his own person guarded, and Frome under constant surveillance.

And assuming Frome could give his guards the slip, what then? Even if the Dzlieri failed to catch him in his flight (as they probably would) or if he were not devoured by one of the carnivores of the jungle, without a compass, he would get hopelessly lost before he had gone one kilometer and presently die of the deficiency-diseases that always struck down Earthmen who tried to live on an exclusively Vishnuvan diet.

Meanwhile he liked the feeling of craftsmanship that came from exercising his hands on the tough metals, and found the other human beings agreeable to know.

One evening Sirat said: "Adrian, I should like you to take tomorrow off to witness some exercises I am planning."

"Glad to," said Frome. "You coming, Elena?"

She said, "I prefer not to watch preparations for the crime of violence."

Sirat laughed. "She still thinks she can convert the Dzlieri to pacifism. You might as well instruct a horse to perform on the violin. She tried it on Chief Kamatobden and he thought her simply deranged."

"I shall yet bring enlightenment to these strayed souls," she said firmly.

The exercises took place in a large clearing near Amnairad. Sirat sat on a saddled zebra watching squadrons of Dzlieri maneuver at breakneck speed with high precision: some with native weapons, some with the new shotguns. A troop of lancers would thunder across the field in line abreast; then a square of musketeers would run onto the field, throw themselves down behind stumps and pretend to fire, and then leap up and scatter into the surrounding jungle, to reassemble elsewhere. There was some target practice like trapshooting, but no indiscriminate firing; Sirat kept the ammunition for his new guns locked up and doled it out only for specific actions.

Frome did not think Sirat was in a position to attack Bembo—yet. But he could certainly make a sweep of the nearby Vishnuvan tribes, whose armies were mere yelling mobs by comparison with his. And then... Silva must be told about this.

Sirat seemed to be controlling the movements in the field, though he neither gestured nor spoke. Frome worked his way close enough to the *renegado* to see that he had the little brass tube in his mouth and was going through the motions of blowing into it. Frome remembered: a Galton whistle, of course! It gave

out an ultrasonic blast above the limits of human hearing, and sometimes people back on Earth called their dogs with them. The Dzlieri must have a range of hearing beyond 20,000 cycles per second.

At dinner that night he asked Sirat about this method of signalling.

Sirat answered: "I thought you would so conjecture. I have worked out a system of signals, something like Morse. There is no great advantage in employing the whistle against hostile Dzlieri, since they can perceive it also; but with human beings or Romeli... For instance, assume some ill-intentioned Earthman were to assault me in my quarters when my guards were absent? A blast would bring them running without the miscreant's knowing I had called.

"That reminds me," continued the adventurer, "tomorrow I desire you to commence twenty more of these, for my subordinate officers. I have decided to train them in the use of the device as well. And I must request haste, since I apprehend major movements in the near future."

"Moving against Kamatobden, eh?" said Frome.

"You may think so if you wish. Do not look so fearful, Elena; I will take good care of myself. Your warrior shall return."

Maybe, thought Frome, that's what she's jolly well scared of.

FROME LOOKED OVER the Galton whistle Sirat had left with him. He now ran the whole shop and knew where he could lay hands on a length of copper tubing (probably once the fuel-line of a helicopter) that should do for the duplication of the whistle.

With the help of one of the natives he completed the order by nightfall, plus one whistle the Dzlieri had spoiled. Sirat came over from the palace and said: "Excellent, my dear Adrian. We shall go far together. You must pardon my not inviting you to dine with me tonight, but I am

compelled to confer with my officers. Will you and Miss Millan carry on in the regular dining-room in my absence?"

"Surely, Dom Sirat," said Frome. "Glad to."

Sirat wagged a forefinger. "However, let me caution you against exercising your charm too strongly on my protegee. An inexperienced girl like that might find a tall young Englishman glamorous, and the results would indubitably be most deplorable for all concerned."

When the time came, he took his place opposite Elena Millan at the table. She said: "Let us speak English, since some of our friends here" (she referred to the ubiquitous Dzlieri guards) "know a little Portuguese, too. Oh, Adrian, I'm so afraid!"

"Of what; Sirat? What's new?"

"He has been hinting that if I didn't fall in with his dynastic plans, he would compel me. You know what that means."

"Yes. And you want me to rescue you?"

"I—I should be most grateful if you could. While we are taught to resign ourselves to such misfortunes, as things earned in earlier incarnations, I don't think I could bear it. I should kill myself."

Frome pondered. "D'you know when he's planning this attack?"

"He leaves the day after tomorrow. Tomorrow night the Dzlieri will celebrate."

That meant a wild orgy, and Sirat might well take the occasion to copy his subjects. On the other hand, the confusion afforded a chance to escape.

"I'll try to cook up a scheme," he told her.

NEXT DAY FROME FOUND

his assistants even more restless and insubordinate than usual. About noon they walked out for good. "Got to get ready for the party!" they shouted. "To hell with work!"

Mishinatven had vanished, too. Frome sat alone, thinking. After a while he wandered around the shop, handling pieces of material. He noticed the spoilt Galton whistle lying where he had thrown it the day before; the remaining length of copper tubing from which he had made the whistles; the big copper kettle he had never gotten around either to scrapping or to fixing. Slowly an idea took shape.

He went to the forge-room and started the furnace up again. When he had a hot fire, he brazed a big thick patch over the hole in the kettle, on the inside where it would take pressure. He tested the kettle for leakage and found none. Then he sawed a length off the copper tube and made another Galton whistle, using the spoilt one as a model.

In the scrap-sorting room he found a length of plastic which he made into a sealing-ring or gasket to go between the kettle and its lid. He took off the regular handle of the kettle, twisted a length of heavy wire into a shorter bail, and installed it so that it pressed the lid tightly down against the gasket. Finally he made a little conical adapter of sheet-copper and brazed it to the spout of the kettle, and brazed the whistle to the adapter. He then had an air-tight kettle whose spout ended in the whistle.

Then it was time for dinner.

Sirat seemed in a rollicking good humor and drank more moikhada than usual.

"Tomorrow," he said, "tomorrow we cast the die. What was that ancient European general who remarked about casting the die when crossing a river? Napoleon? Anyway, let us drink to tomorrow!" He raised his goblet theatrically. "Will you not weaken, Elena? Regrettable; you do not know what you miss. Come, let us fall upon the provender, lest my cook decamp to the revellers before we finish."

From outside came Dzlieri voices in drunken song, and sounds of a

fight. The high shriek of a female Dzlieri tore past the palace, followed by the laughter and hoofbeats of a male in pursuit.

These alarming sounds kept the talk from reaching its usual brilliance. When the meal was over, Sirat said: "Adrian, you must excuse me; I have a portentous task to accomplish. Please return to your quarters. Not you, Elena; kindly remain where you are."

Frome looked at the two of them, then at the guards, and went. In passing through the breezeway he saw a mob of Dzlieri dancing around a bonfire. The palace proper seemed nearly deserted.

Instead of going to his room he went into the machine-shop. He lit a cresset to see by, took the big copper kettle out to the pump, and half filled it with several liters of water. Then he staggered back into the shop and heaved the kettle up on top of the forge. He clamped the lid on, stirred the coals, and pumped the bellows until he had a roaring fire.

He hunted around the part of the shop devoted to the repair of tools and weapons until he chose a big spear with a three-meter shaft and a broad keen-edged half-meter head. Then he went back to the forge with it.

After a long wait, a faint curl of water-vapor appeared in the air near the spout of the kettle. It grew to a long plume, showing that steam was shooting out fast. Although Frome could hear nothing, he could tell by touching a piece of metal to the spout that the whistle was vibrating at a tremendous frequency.

Remembering that ultrasonics have directional qualities, Frome slashed through the matting with the broad blade of the spear until the forge-room lay open to view in several directions. Then he went back into the palace.

BY NOW HE KNEW THE structure well. Towards the center of the maze Sirat had his private suite: a sitting-room, bedroom, and bath. The only way into this

suite was through an always-guarded door into the sitting-room.

Frome walked along the hallway that ran beside the suite and around the corner to the door into the sitting-room. He listened, ear to the matting. Although it was hard to hear anything over the racket outside, he thought he caught sounds of struggle within. And from up ahead came Dzlieri voices.

He stole to the bend in the corridor and heard: "...surely some demon must have sent this sound to plague us. In truth it makes my head ache to the splitting-point!"

"It is like God's whistle," said the other voice, "save that it comes not from God's chambers, and blows continually. Try stuffing a bit of this into your ears."

The first voice (evidently that of one of the two regular guards) said: "It helps a little; remain you here on guard while I seek the medicine-man."

"That I will, but send another to take your place, for God will take it amiss if he finds but one of us here. And hasten, for the scream drives me to madness!"

Dzlieri hooves departed. Frome grinned in his whiskers. He might take a chance of attacking the remaining guard, but if the fellow's ears were plugged there was a better way. Sirat would have closed off his bedroom from the sitting-room by one of those curtains of slats that did duty for doors.

Frome retraced his steps until he was sure he was opposite the bedroom. Then he thrust his spear into the matting, slashed downward, and pushed through the slit into a bedroom big enough for basketball.

Sirat Mongkut looked up from what he was doing. He had tied Elena's wrists to the posts at the head of the bed, so that she lay supine, and now, despite her struggles, was tying one of her ankles to one of the posts at the foot. Here was a conqueror who liked to find his dynasties in comfort.

"Adrian!" cried Elena.

Sirat's hand flashed to his hip—and came away empty, Frome's big-

gest gamble had paid off: he assumed that just this once Sirat might have discarded his pistol. Frome had planned, if he found Sirat armed, to throw the spear at him; now he could take the surer way.

He gripped the big spear in both hands, like a bayoneted rifle, and ran towards Sirat. The stocky figure leaped onto the bed and then to the floor on the far side, fumbling for his whistle. Frome sprang onto the bed in pursuit, but tripped on Elena's bound ankle and almost sprawled headlong. By the time he recovered he had staggered nearly the width of the room. Meanwhile Sirat, having avoided Frome's rush, put his whistle to his mouth, and his broad cheeks bulged with blowing.

Frome gathered himself for another charge. Sirat blew and blew, his expression changing from confidence to alarm as nobody came. Frome knew that no Dzlieri in the neighborhood could hear the whistle over the continuous blast of the one attached to the kettle. But Sirat, unable to hear ultrasonics, did not know his signals were jammed.

• **AS FROME STARTED TO-** wards him again, Sirat threw a chair. It flew with deadly force; part of it gave Frome's knuckles a nasty rap while another part smote him on the forehead, sending him reeling back. Sirat darted across the room again on his short legs and tore from the wall one of those groups of native weapons he ornamented his palace with.

Down with a clatter came the mass of cutlery: a pair of crossed battle-axes, a gisarme, and a brass buckler.

Next Issue

THE BLACK ANT

A Moving Novellet

by Walter Kuhlman

By the time Frome, having recovered from the impact of the chair, came up, Sirat had possessed himself of the buckler and one of the axes. He whirled and brought up the buckler just in time to ward off a lunge of the spear. Then he struck out with his ax and spun himself half around as he met only empty air. Frome, seeing the blow coming, had leaped back.

Sirat followed, striking out again and again. Frome gave ground, afraid to parry for fear of having his spear ruined, then drove Sirat back again by jabs at his head, legs, and exposed arm. They began to circle, the spear-point now and then clattering against the shield. Frome found that he could hold Sirat off by his longer reach, but could not easily get past the buckler. Round they went, *clank! clank!*

Sirat was slow for a second and Frome drove the spear-point into his right thigh, just above the knee... But the thrust, not centered, inflicted only a flesh-wound and a great rip in Sirat's pants. Sirat leaped forward, whirling his ax, and drove Frome back almost to the wall before the latter stopped him with his thrusts.

They circled again. Then came a moment when Sirat was between Frome and the door to the sitting-room. Quick as a flash Sirat threw his ax at Frome, dropped his shield, turned, and ran for the curtained door, calling "Help!"

Frome dodged the ax, which nevertheless hit him a jarring blow in the shoulder. As he recovered, he saw Sirat halfway to safety, hands out to wrench the curtain aside. He could not possibly catch the Siamese before the latter reached the sitting-room and summoned his delinquent guards to help him.

Frome threw his spear like a javelin. The shaft arced through the air and the point entered Sirat's broad back. In it went. And in, until half its length was out of sight.

Sirat fell forward, face down, clutching at the carpet and gasping. Blood ran from his mouth.

Frome strode over to where the



would-be emperor lay and wrenched out the spear. He held it poised, ready to drive home again, until Sirat ceased to move. He was almost sorry... But there was no time for Hamlet-like attitudes; he wiped the blade on Sirat's clothes, carried it over to the bed, and sawed through Elena's bonds with the edge. Without waiting for explanations he said: "If we're quick, we may get away before they find out. That is, if the guards haven't heard the noise in here."

"They will think it was he and I," she replied. "Before he dragged me in here he told them not to come in, no matter what they heard, unless he whistled for them."

"Serves him right. I'm going down-street to get some of his zebras. Where's that bloody gun of his?"

"In that chest," she said, pointing. "He locked it in there, I suppose because he was afraid I'd snatch it and shoot him—as though I could kill any sentient being."

"How do we get into—" Frome began, and stopped as he saw that the chest had a combination lock. "I fear we don't. How about his ammunition-chest in the store-room?"

"That has a combination lock, too."
 "Tamates!" growled Frome. "It looks as though we'd have to start out without a gun. While I'm gone, try to collect a sack of tucker from the kitchen, and whatever else looks useful." And out he went through the slit.

● **OUTSIDE THE PALACE, HE** took care to saunter as if on legitimate business. The Dzlieri, having cast off what few inhibitions they normally possessed, were too far gone in their own amusements to pay him much heed, though one or two roared greetings at him.

Catching the zebras, though, was something else. The animals dodged around the corral, evading with ease his efforts to seize their bridles. Finally he called to a Dzlieri he knew: "Mzumelitsen, lend a hand, will you? God wants a ride."

"Wait till I finish what I am doing," said the Dzlieri.

Frome waited until Mzumelitsen finished what he was doing and came over to help collect three zebras. Once caught, the animals followed Frome back to the palace tamely enough. He hitched them to the rail in the rear and went into the machine-shop, where he rummaged until he found a machete and a hatchet. He also gathered up the radar-target, which looked still serviceable if slightly battered.

When he got back he found that Elena had acquired a bag of food, a supply of matches, and a few other items. These they loaded on one of the zebras, and the other two they saddled.

When they rode out of Amnairad, the Dzlieri celebration was still in its full raucous swing.



NEXT DAY they were beginning to raise the lower slopes of the foothills of Mount Ertma when Frome held up a hand and said: "Listen!"

Through the muffling mass of the Vishnuvan jungle they heard loud Dzlieri voices. Then the sound of bodies moving along the trail came to their ears.

Frome exchanged one look with Elena and they broke into a gallop.

The pursuers must have been coming fast also, for the sounds behind became louder and louder. Frome caught a glimpse of the gleam of metal behind them. Whoops told them the Dzlieri had seen them, too.

Frome said: "You go on; I'll lead them off the trail and lose them."

"I won't! I won't desert you—"

"Do as I say!"

"But—"

"Go on!" he yelled so fiercely that she went. Then he sat waiting until they came into sight, fighting down his own fears, for he had no illusions about being able to "lose" the Dzlieri in their native jungle.

They poured up the trail towards him with triumphant screams. If he only had a gun... At least they did not seem to have any, either. They had only a few guns that would shoot (not counting the shotguns, whose shells were still locked up) and would have divided into many small parties to scour the trails leading out from their center.

Frome turned the zebra's head off into the jungle. Thank the gods the growth was thinner here than lower down, where the jungle was practically impassable off the trails.

He kicked his mount into an irregular run and vainly tried to protect his face from the lashing branches. Thorns ripped his skin and a trunk gave his right leg a brutal blow. As the Dzlieri bounded off the trail after him, he guided his beast in a wide semicircle around them to intersect the trail again behind his pursuers.

When he reached the trail, and could keep his eyes open again, he saw that the whole mob was crowding after him and gaining, led by Mishinatven. As the trail bent, Sirat's lieutenant cut across the corner and hurled himself back on the path beside the Earthman. Frome felt for his machete, which had been

slapping against his left leg. The Dzlieri thundered at him from the right, holding a javelin up for a stab.

"Trickster! Decide!" screamed Mishinatven, and thrust. Frome slashed through the shaft. As they galloped side by side, the point grazed Frome's arm and fell to the ground.

Mishinatven swung the rest of the shaft and whacked Frome's shoulders. Frome slashed back; heard the clang of brass as the Dzlieri brought up his buckler. Mishinatven dropped the javelin and snatched out his short sword. Frome parried the first cut and, as Mishinatven recovered, struck at the Dzlieri's sword-hand and felt the blade bite bone. The sword spun away.

Frome caught the edge of the buckler with his left hand, pulled it down, and hacked again and again until the brass was torn from his grip by the fall of his foe.

The others were still coming. Looking back, Frome saw that they halted when they came to their fallen leader.

Frome pulled on his reins. The best defense is a bloody strong attack. If he charged them now... He wheeled the zebra and went for them at a run, screeching and whirling his bloody blade.

Before he could reach them, they scattered into the woods with cries of despair. He kept right on through the midst of them and up the long slope until they were far behind and the exhaustion of his mount forced him to slow down.

When he finally caught up with Elena Millan, she looked at him with horror. He wondered why until he realized that with blood all over he must be quite a sight.

• **THEY MADE THE LAST** few kilometers on foot, leading their zebras zigzag among the immense boulders that crested the peak and beating the beasts to make them buck-jump up the steep slopes. When they arrived at the top, they tied the beasts to bushes and threw themselves down to rest.

Elena said: "Thank the Cosmos that's over! I could not have gone on much further."

"We're not done yet," said Frome. "When we get our breath we'll have to set up the target."

"Are we safe here?"

"By no means. Those Dzlieri will go back to Amnairad and fetch the whole tribe, then they'll throw a cordon around the mountain to make sure we shan't escape. We can only hope the target brings a rescue in time."

Presently he forced himself to get up and go to work again. In half an hour, with Elena's help, the target was up on its pole, safely guyed against the gusts.

Then Adrian Frome flopped down again. Elena said: "You poor creature! You're all over bruises."

"Don't I know it! But it might have been a sight worse."

"Let me at least wash those scratches, lest you get infected."

"That's all right; Vishnuvan germs don't bother Earth-folk. Oh, well, if you insist ..." His voice trailed off sleepily.

He woke up some hours later to find that Elena had gotten a fire going despite the drizzle and had a meal laid out.

"Blind me, what have we here?" he exclaimed. "I say, you're the sort of trail-mate to have!"

"That is nothing. It's you who are wonderful. And to think I've always been prejudiced against blond men, because in Spanish novels the villain is always pictured as a blond!"

Frome's heart, never so hard as he made it out to be, was full to overflowing. "Perhaps this isn't the time to say this but—uh—I'm not a very spiritual sort of bloke, but I rather love you, you know."

"I love you too. The Cosmos has sent a love-ray..."

"Oi!" It was a jarring reminder of that other Elena. "That's enough of that, my girl. Come here."

She came.

• **W**HEN PETER QUINLAN got back to Bembom with the convalescing Hayataka, Comandante Silva listened eagerly to Quinlan's story until he came to his flight from Mishinatven's territory.

"...after we started," said Quinlan, "while Hayataka was still out, they attacked again. I got three, but not before they had killed Frome with javelins. After we beat them off I buried—"

"Wait! You say Frome was killed?"

"Pois sim."

"And you came right back here, without going to Ertma?"

"Naturally. What else could I do?"

"Then who set up the radar-target on the mountain?"

"What?"

"Why yes. We set up our radars on the ends of the base-line yester-

day, and the target showed clearly on the scopes."

"I don't understand," said Quinlan.

"Neither do I, but we'll soon find out. *Amigo*," he said to the sargeant Martins, "tell the aviation group to get the helicopter ready to fly to Mount Ertma, at once."

When the pilot homed on the radar target, he came out of the clouds to see a kite-like polygonal structure gleaming with a dull gray aluminum finish on top of a pole on the highest peak of Mount Ertma. Beside the pole were two human beings sitting on a rock and three tethered zebras munching the herbage.

The human beings leaped to their feet and waved wildly. The pilot brought his aircraft around, tensely guiding it through gusts that threat-

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ened to dash it against the rocks, and let the rope-ladder uncoil through the trapdoor. The man leaped this way and that, like a fish jumping for a fly, as the ladder whipped about him. Finally he caught it.

Just then a group of Dzlieri came out of the trees. They pointed and jabbered and ran towards the people, whipping out javelins.

The smaller of the two figures was several rungs up the ladder when the larger one, who had just begun his ascent, screamed up over the whirr of the rotor-blades and the roar of the wind: "Straight up! Quick!"

More Dzlieri appeared—scores of them—and somewhere a rifle barked. The pilot (just as glad it was not he dangling from an aircraft bucking through a turbulent overcast) canted his blades and rose until the clouds closed in below.

The human beings presently popped into the cabin, gasping from their climb. They were a small dark young woman and a tall man with a centimeter of butter-colored beard matted with dried blood. Both were nearly naked save for tattered canvas boots and a rag or two elsewhere, and were splashed with half-dried mud. The pilot recognized Adrian Frome the surveyor.

"Home, Jayme," said Frome.

● **FROME, CLEANED, SHAVED** and looking his normal self once more except for a notch in his left ear, sat down across the desk from Silva, who said: "I cannot understand why you ask for a transfer to Ganesha now of all times. You're the hero of Bembom. I can get you a permanent P-5 appointment; perhaps even a P-6. Quinlan will be taken to Krishna for trial; Hayataka is retiring on his pension; and I shall be hard up for surveyors. So why must you leave?"

Frome smiled a wry, embarrassed smile. "You'll manage, *Chefe*. You still have Van der Gracht and Mehtalal, both good men. But I'm quite determined, and I'll tell you why. When Elena and I got to the top of that mountain we were in a pretty

emotional state, and what with one thing and another, and not having seen another human female for weeks, I asked her to marry me and she accepted."

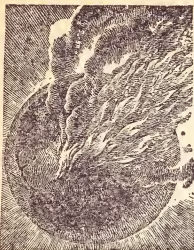
Silva's eyebrows rose. "Indeed! My heartiest congratulations! But what has that to do with—"

"Wait till you hear the rest! At first everything was right as rain. She claimed it was the first time she'd been kissed, and speaking as a man of some experience I suppose it was. However, she soon began telling me *her* ideas. In the first place this was to be a purely spiritual marriage, the purpose of which was to put my feet on the sevenfold path of enlightenment so I could be something better than a mere civil engineer in my next incarnation—a Cosmotheist missionary, for example. Now I ask you!

"Well, at first I thought that was just a crochet I'd get her over in time; after all we don't let our women walk over us the way the Americans do. But then she started preaching Cosmotheism to me. And during the two and a half days we were up there, I'll swear she didn't stop talking five minutes except when she was asleep. The damndest rot you ever heard—rays and cosmic love and vibrations and astral planes and so on. I was never so bored in my life."

"I know," said Silva. He too had suffered.

"So," concluded Frome, "about that time I began wishing I could give her back to Sirat Mongkut. I was even sorry I'd killed the blighter. Although he'd have caused no end of trouble if he'd lived, he was a likeable sort of scoundrel at that. So here I am with one unwanted fiancée, and I just *can't* explain the facts of life to her. She once said as a joke that I'd be better off on Ganesha, and damned if I don't think she was right. Now if you'll just indorse that application... Ah, *muito obrigado*, Senhor Augusto! If I hurry I can just catch the ship to Krishna. Cheerio!"



AND THERE WAS LIGHT

By

Lester del Rey

(author of "Mind of Tomorrow")

Volcek believed his weapon would be humane, and less destructive than the dreaded fusion bombs.

When the enemy believes the worst of you, they won't settle for anything except the worst!

STEFANIE was still white and weak, but the worry on her face had nothing to do with her recent sickness as she rushed about the small, crudely furnished apartment, trying to appear normal. Johann Volcek studied his young wife, worrying more about her than the meeting for the moment.

If the child had only lived...

Then he smiled a bit ironically, before letting his mind come up with the old palliatives. There'd be other children for him and Stefanie—and for this half of the world. The other half would simply have to suffer painlessly through a generation, for the good of the whole world.

"But the Director, Johann..." Stefanie's voice was on the thinnest edge of hysteria. "Johann, to our place! If I'd known, I could have made curtains, at least. And can you be sure..."

"It isn't suspicion, *radost moya*," he assured her quickly. "I told you the Director trusts me—he has to. And he simply wants to see you. You know he's a family man himself."

But he let her work, fussing about the place, refilling his coffee, brushing an imaginary speck of dust off his coat. The doctor had told him

that work was best for her—anything to get her mind off the lost child until there could be others. And the Director may have been a better distraction than any of the others, aside from the flattery of it.

Then the telephone on the wall rang sharply, and he answered it, smiling back at her. "Volcek."

"Good, Johann." It was the Director's Secretary of Science, Jean Petrecci and Volcek's sponsor. "We shall be there soon—and it's a beautiful day for the test, not so?"

Johann agreed quickly, though he had not yet had time to look through the windows even, with Stefanie's worry over the visit of the Director. But as he looked out now, he saw that it was a good day, clear, with only thin wisps of cloud in the sky.

Then, in the street below, there was a stirring, first of big cars, and then the shouts of the people. It was silenced, and the creaking elevator began to thump upwards. Stefanie made a last frantic dash into the bedroom, brushing nervously at her hair, and came out just as the knock sounded.

Johann had been right—the Director must have trusted him, since the big man had come up with only three

of his guards, and now came thrusting his broad shoulders in, his greyed head not even darting about the room, his eyes leading him toward the Volceks.

Quick admiration filled his eyes at sight of Stefanie, and his gruff voice was soft, the voice the radio brought them when he was the Father of the State, or when he was telling them of the new plans for more food and better living.

"Sit—I'm only one of you, you know. Ah, Johann, this is the little Stefanie. I've wanted to meet you, to see the one Johann has spoken of so often." His language was perfect, but with the queer stilted effect it always had when he was not reading a prepared speech.

Watching Stefanie stammer over the honor of the Director's presence, and then relax gradually as the spell of the man took over, Johann began to smile more naturally. The Director was talking of his own beginnings—in much less than this—and the moving they would soon be doing, into a newer apartment, a fine new suburb. And surprisingly, he was talking of his own wife and children, and Stefanie was answering.

• **R**EMEMBERING STORIES of the Director, Johann found it hard to recognize this as reality. The man had come up from the lowest ranks, an iron hand leading him up the ladder of Centralia's autocratic beurocracy. But now the hand was sheathed, and even Stefanie began to smile.

Then it was over, and the Director was rising. Johann kissed his wife quickly, embarrassed slightly at the Director's approving smile, and they were out in the elevator, heading toward the big, waiting cars.

"Now I trust you, Johann Volcek," the Director told him. "Now I can go with you to this test. With such a wife waiting you, there can be no trickery against the State. No—don't say it! It is not you I could distrust—it is everyone I must distrust. But not now. What does the doctor say?"

"Another year." For a time they had been afraid that Stefanie could never have children again, but the new treatments had apparently been effective. Centralia's progress in all phases of gynecology had been spectacular.

The Director nodded. "Good. The State needs such children as you will have. And a man has need of little ones. But tell me—you still feel sure of this test?"

Then the talk became technical. Johann was sure. There had been smaller tests, during the two years the project had been going on, and all of them had been effective.

Then cold fingers ran over him, tingling at the ends of his nerves, as he realized the trick semantics was playing on him.

Test? It had been the name they had given it, and in time it had come to be no more than that in his mind—a test of his theories. But this was *not* just a test. This was the feat itself, the step that would bring an end to half the world, the culmination of the hopes of Centralia, and the final, positive proof of the ideas of Volcek.

He had been almost unaware of the power that had grown from his idea, but now it hit him. It wasn't easy to do that to half a world, even in these days. But it had to be done.

Thirty years before, there had been a sprawling group of small nations and several large powers. But with the beginning of the atomic age, that had shaken itself down until now there were actually only the two hemispheres. Centralia had most of the world's population, but the West had achieved equality by its headstart in the sciences and in industry. For thirty years, little nation had accreted to big nation, until now there were the two of them. Nominally, the little nations still existed; but it was a polite fiction, like the fiction of bland softness the Director had adopted before Stefanie.

And this was not a world where two powers could exist. They had somehow achieved it, while the accretion of control over the neighboring states went on. There had been

fracas piled onto struggle, but never outright war. Now, though, things had reached a stage where each side knew that sooner or later the hydrogen-bombs must fall, and where those bombs were of a size and efficiency that might even end the world. There were even rumors of solar-phoenix bombs which could turn the world into a flaming, lesser sun.

Volcek sighed. This was better than that. Better that half the world should slow down and come to a gradual halt than that the rain of hell should descend from the heavens, perhaps igniting the world itself.

THEY WERE AT THE laboratories, now, and Volcek got out of the car behind the Director, vaguely conscious that taking second place was a mark of honor. Inside the building, one of the rooms had been cleared, leaving a few seats, a stand, and a single board of levers against the wall. Already, the seats were taken, and men were rising to salute the Director.

Ki Fong, Tsamatsu, Bhandaputra, Simonolov, Schwartzkopf, Jordssen—all of the big names of government and science—were there. Some were scowling intently as they tried to digest the printed formulae on the big blackboard which gave part of the theory behind Volcek's work; others were smiling, assured only that this was the day when Centralia would come into its own. And some, as always, were estimating Volcek, wondering how his importance would conflict with their own.

The Director smiled thinly, dropping an arm over Volcek's shoulder. "After this day, Johann, you'll need bodyguards. I have seen to that. And Petrecci...well, we shall see..."

Johann caught himself before he could wince. He'd liked Petrecci, had no desire to replace him. But if the implication of the Director's words was what he thought...still, it would be good for Stefanie. She had had too much trouble, and it was time life smiled on her a little. It would be good for their children, too, to grow up with comfort, even a

little luxury, tutored perhaps with the children of the Director, himself. As Secretary of Science, Johann Volcek could give his family a great deal. He caught Petrecci's eyes on him, and turned his head quickly back to the other men.

At the Director's nod, he began outlining the facts to them. Some already knew of what was being done here, but all were listening as if the Director himself were speaking.

He could only give the barest facts. He'd been experimenting with a means of controlling fission for some power application, working on the problem of getting hydrogen to fission at temperatures below the millions of degrees where it normally began, and in tiny amounts. And by sheer accident, he had stumbled on a process where nitrogen fissioned, instead—two atoms of nitrogen combining into one, straining the nucleus that now held fourteen protons and fourteen neutrons, distorting it until some of the binding force of the nucleus released energy, and it broke up into simpler atoms again—as if both fission and fusion were going on.

It had not been successful, from a commercial angle, but it had produced an unexpected result. The mice which had been kept to test out danger of radiation had not been killed—but they had been sterile, as events proved, from then on. The release of radiation was not quite normal gamma rays; it was subtler than that—some queerly polarized radiation that struck at the fertility of animals and ended it.

"But you were not sterilized," Ki Fong interrupted him.

"I was lucky—I had been using a shield that was heavy enough to turn aside the radiation—the four-foot walls of the oven where the experiment was conducted. It only leaked out through the panel we later found had a crack in it—but that was toward the mice."

Three years had been spent in testing it on mice, before the reports had found Petrecci, and brought him to the little laboratory of Johann Volcek. By then, Volcek had devel-

oped a complete control of the process, and had learned to fuse and fission oxygen as well as nitrogen, but without the production of sterilizing radiation this time.

After that, there had been no more mice. Volcek shuddered, trying to conceal it, as he remembered the prisoners who had stood before the portal of the oven, and gone away, sterile. And there had been tests in the big, deserted wastes near the Gobi, where balls of fire had leaped from his tiny little devices, and cracked themselves into flaming energy that grew and spread before vanishing. More sterility had followed.

"It requires very little apparatus," Volcek said, finally. He pulled a small tube from a drawer near the wall, and held it out to them. "This is the source. A small battery, these coils, tubes, this little crucible—nothing more. Once we knew why it started the fusion, it was easy to simplify."

And it was simple. A man could carry one of the devices with him in a small bag, and it was meaningless in appearance. It could be built into a radio, as if it were part of the tuning device. It could slip past customs, harmless in its looks, and be spread wherever wanted.

And now...

THE DIRECTOR TOOK over, then, telling them what had already been done. In every city and hamlet, from coast to coast and from polar cap to polar cap, the West was covered with these tiny little devices, each equipped with a little crystal delicately attuned to one here, so that they would all function at once.

There would be no war. Centralia had labored to avoid war in spite of the hatred and lusts of the West. Now, they would be even more agreeable, even more meek. They would take the insults; they would not fight. Because, once the nitrogen of the air had done its job, there would be only a generation of patience, while no more children were born to the West. And some day, there

would be only one Power—Centralia.

Schwartzkopf asked the question that was bothering the others, though he already knew the answer. "But these balls of fissioning or fusing nitrogen—when they go off over the West, they are too much like atomic bombs. Won't the West feel it is attacked and retaliate with their genuine bombs?"

"We, too, shall be attacked!" It was Volcek's other process, of course. Simultaneously, there would be released similar "bombs" over all of the territory of Centralia. The heat and power would do a minor amount of damage, of course—but this process produced no sterilizing radiation. "Only New Zealand will be free."

New Zealand had somehow held out of the two coalitions, by its hardest efforts and with the help of its location. It was weakly allied to the West, but too remote.

The Director smiled again, the tight smile that was reserved for private meetings. "We shall, of course, accuse the West—but within the hour, when word of their trouble comes, we shall ask for a truce to find the culprit. Simple, is it not?"

The clock on the wall indicated five minutes before zero hour, and Volcek wiped his hands surreptitiously against his coat. It was simple enough, this use to which they had put his discoveries. And, he told himself again, it was better than any rain of real atomics. The West would not be hurt seriously—it would simply die out slowly, as no more children were born. It was really the most merciful solution to the politics of this world.

He could picture some of the panic, of course, when the little tubes did their work. First a tiny spark would form in the tube, with a spitting and hissing. Then it would grow, breaking out of the tube and through walls or anything in its way, growing and rising, spreading erratically horizontally, moving with a strange random motion, as it climbed upwards and grew larger and larger. It would reach the size of a normal atomic bomb, in a few



minutes. And some would be killed by its heat, as some buildings would catch fire from it.

But mostly, there would be the terror as the people in the cities saw it spread its visible radiation and heard the familiar crackling thunder of its detonation. The terror would kill some of them, in their panic-flight, even while the thing itself drifted upwards until it found a layer of air too thin for it to go on, and it came to an automatic end.

But they would mostly escape, except for bad cases of "sunburn" and the results of their own panic. Dry material flamed quickly before its peculiar radiation, but men were not made of dry material, and it was almost harmless. They would simply have no children. And that was better than most of them could expect in a day when each morning marked the beginning of a new fear of hydrogen bombs or worse.

One more minute.

Volcek had expected the Director to move to the panel where the big switch would cut on the surprisingly small oscillator that would trigger the little crystals in the tube projectors. But the Director was stepping back, motioning him forward. "You, Johana—it is an honor I have reserved for you."

THERE WAS SILENCE IN the laboratory room as Volcek moved slowly toward the board. He straightened, his eyes going down to his coat, where a bit of lint clung to it. Stefanie would have spotted it at once and rushed to brush it off. Stefanie who knew nothing of what his great work was, but who was awed by having a husband who could receive a visit from the Director. Stefanie who could have other children, after all, in this world that would have ultimate peace in spite of all the war threats, because of the work her husband was now about to do.

Suddenly, he wondered how many Stefanies there might be in the West. How many women would wait for the children they wanted, and never find them? How many would curse him, when they finally realized the truth, without ever knowing that he was the man they were cursing?

He cut off the thought, savagely. There would be others in the long centuries to come, who would know his name and would then bless him, as their children grew up without the threat of war and extinction. His children would be proud of him—his and Stefanie's.

He touched the switch that was to set off the harmless, fake "bombs" over their own world first. The Director was at his side, his face no longer smiling, but narrowed to that of a wolf.

Then the Director chuckled, and the edge of his lips curled up. "*Let there be light*," he quoted, and his eyes showed that he knew the original usage of the term in the Book he was quoting.

And there was light, as Johann's finger hit the switch. A tiny, spitting, hissing thing lifted from the nearby city, going up and forward in weird, erratic movements, growing larger, and spreading out, now beginning the muttered, staccato thunder that was not unlike a plutonium bomb.

The Director reached over and pressed the other switch that would send the sterilizing bombs up over the West—but he did not depress it

fully. He stopped, and nodded to Volcek, and again Johann's hand went out, pushing the lever of the switch.

He should have brought Stefanie—if only she could have known nothing of the results. She would have been proud of him then, as the Director solemnly shook the hand that had done its work, and the other men began to cluster around him.

Then they moved toward the windows, hesitantly at first, not quite sure that this fire in the heavens over the city beyond was really the safe kind. But the Director lead them, together with Volcek, and they stood gazing out.

It was a huge ball of blazing fire in the sky now, partially softened by the filters that had sprung shut over the windows automatically, and the mutter of its detonation reached them as they stood there.

There was some damage, of course, even here. Some of the older wooden buildings near where it had first appeared were bursting into flames, and the distant figures of people had gone into a panic—they had to believe it was real, just as the West must believe for a time that both powers had received the same treatment.

Stefanie? But Volcek had taken care of that, with a drug in her coffee. She would be asleep, unaware of the tumult, and not one of the mob trying frantically to escape what could never harm them.

NOW THE BALL OF FIRE was rising upwards more steadily, its own heat driving it up as a blast of hot air is carried up over a fire. The brightness began to fade as they watched, moving up and turning smaller, shrinking, and finally going away.

Volcek sighed, and the Director echoed it, a satisfied sigh, and a somewhat regretful one. "It is hard to see even a few of my people hurting themselves," the Director said slowly. "But it is best. And—it is done."

He turned to Volcek, and Johann straightened, reminding himself that

whatever the Director said must be remembered. He would have to tell Stefanie—and someday, he could tell his children, and his grandchildren. He must remember it.

But the Director's words were never spoken. There was a shout from the windows, and they swung back, to see another tiny flame leaping up, this time nearer, growing and spitting.

There was something wrong with it. The other had grown more slowly. This raged out, savagely, growing more sure of itself as it leaped toward them, then darted sideways.

Volcek turned suddenly to the instruments packed in the drawers. The spectrovisor and the diffractograph came out in his shaking hands, and he slapped them down onto the wooden sill of the window, already beginning to smoke faintly.

Then his hands steadied as he adjusted the instruments.

One look was enough. This was the nitrogen-fusion, not the harmless oxygen reaction.

His eyes met the Director's, and he nodded, but the nod was unnecessary. The Director had already guessed.

They moved toward him, a harsh mob sound coming from them, but the Director was before them.

"No! Stop!" The voice that had been trained to command a power greater than men had ever held before stopped them. "No, if the West has scientists too, that is no fault of Johann Volcek. Johann, you did not fail; you will not suffer."

Volcek heard him, and saw them fall back. He thought again of the lint on his coat, and looked down at it. He picked it off, while the others drew back, and the Director was assuring him that all would be well with him.

Stefanie would have no children now. There would be no grandchildren to hear the Director's senseless words, telling him he would not suffer.

You don't suffer when you've killed a race.



MOMENTUM

By Charles Dye

(author of "Time Killer")

Ballard had but a few hours to solve the problem, and he knew that the answer was there, before his eyes—if he could see it in time!

ASTEROID 1207 came spinning into the auxiliary ship's viewplate like a glittering black mirage. The eight-mile chunk of rock was the last link in a chain of nine asteroid navigational-markers still needing blinker equipment installation. Minutes later, the *Minnow* lay neatly berthed in the deepest hollow of the asteroid, the shining wires of its drill grapples anchoring it firmly to the jagged rock. The airlock opened and two men in spacesuits stepped out. They climbed to the top of the nearest hill dragging a platform of tools and equipment; the ragged, close horizons of the asteroid made a hostile background for them as they worked in silence.

Ballard leaned far over the rough edge of a circular pit, directing the heat radiation beam that melted the foundation plastic smoothly over the walls. He couldn't spare the time to turn his head and watch Walton, but he could follow the other's progress in welding the framework of the blinker tower by the irregular breathing and clanks and buzzes com-

ing through his earphones. He listened to Walton's motions with an automatic alertness developed over six long weeks of tension—ever since the finding of the rotenite nuggets on the second of the light-marker asteroids. The rotenite represented enough wealth to make them among the richest men in the solar system. Or one of them—the richest. That was what Ballard was afraid of.

Suddenly the clanks and rustles stopped, and Walton's voice muttered: "Must have left the number three flux; better go back for it."

"What?" Ballard caught himself asking rhetorically, apprehension flooding through him.

"I said I left something. Have to go back and get it." There was a faint tremor in Walton's voice.

With a hard calm he wouldn't have recognized six weeks ago, Ballard considered the consequences of making an excuse to go with Walton. But the excuse would destroy the pose of innocence he'd so carefully acted since his first suspicions of Walton's intention. And he could be wrong. No sense in antagonizing



Just because an event "has to" happen, some people think that, of course, it will happen. It ain't necessarily so!



Walton, particularly with the frayed condition both their nerves were in. "Ok," he grunted. "Bring back another SR bit; this one I've been using chitters."

There were the sounds of Walton bounding down towards the ship in the peculiar dancing glide demanded by the low gravity. Methodically, without looking up, Ballard continued his job, following Walton with his earphones. Only when the foundation fill was laid would it seem natural for him to stop working for a moment and go to the ship.

Gradually, layer on layer, the plastic melted, coated the walls and hardened. He heard Walton reach the ship, then there was a slight ringing noise as the man touched his key-magnet to the airlock. As Walton entered the lock, his mike registered the pressure of air by suddenly picking up all the sounds of the ship; the throbbing of the generators, the intermittent rush and sigh of the airconditioner, and the close curved walls echoing back the scrape of his shoes on the locker room floor.

Four minutes to go. Ballard finished melting the plastic onto the walls, resisting the urge to hurry and risk botching the work. Walton had no reason to kill him—except for the rotenite. And since its discovery, Walton had shown nothing but a surface friendship covering a hidden hatred and fear that was growing into surreptitious maneuverings towards murder. But with a pretense at normality, Ballard hoped Walton would get over his obsession and forget it, never knowing that he'd seen anything suspicious. And meanwhile Ballard had only to stay out of the way of accidents without seeming suspiciously careful.

He added the last necessary layer of plastic, switched off the heat beam and stood up. There was no sign of motion around the *Minnow*. Walton had not come out, but Ballard's earphones continued to pick up Walton's nervous, irregular breathing.

• **B**ALLARD STARTED down the hill in long, low

floating bounds. The *Minnow* expanded up at him, a ship etched in black and white against a jagged mass of black and grey ores. Just before landing on his second bound, his earphones picked up a sharp metallic ringing note he couldn't identify. Suddenly the ship expanded up directly in front of him; he'd overshot his landing. He thudded into the ship, slid down to the ground and landed facing the lock, his key-magnet in hand.

Again he heard the familiar tuning-fork note, this time ringing faintly up from the magnet in his own hand as he put it against the circle of lighter metal that was the lock. The circle turned, with the magnet rotating out into a handle. He grabbed it and yanked to slide back the airlock panel. The yank pulled him off his feet. For an instant he couldn't orientate; then he realized that he had moved because the panel had not. It was a case of action or reaction. The panel had not budged, seeming to be one with the flawless sweep of the hull.

He tried again, yanking it with the same futile results. Apprehension flooded through him. "Walton!" he called. "Walton, the panel's stuck! Open it from the inside!"

For an instant he was aware of Walton's nervous breathing, then it stopped—there was a low chuckle. "Listen, Ballard! I'd be crazy to let you in. Don't you think I've seen you watching me like a hawk ever since we found the rotenite, just waiting for a chance to catch me off guard! I should have done this weeks ago, but it didn't occur to me how clean and easy it would be until I thought of the airlock jamming with you outside. So—the lock is jammed and you have left little over two hours of suit oxygen. And while you're out there suffocating to death, I'll be waiting in my sleep-tank on a nice euphoric jag. It's going to be nice being the richest man in the—"

"Wait! Walton, listen! You're all wrong! I—"

Walton had cut his radio. For a moment, Ballard dumbly stood there,

his mind racing around like a pin-wheel. Slowly it stopped, as numbing fear coursed through his nervous system. He'd under-concealed his suspicions, after all; Walton had suspected him of the very same thing he'd suspected Walton of.

Suddenly, in spite of his predicament, in spite of death waiting for him only a few hours in the future, Ballard smiled. He really couldn't hate Walton for what he'd done; it was the old cliché again of too much greed and suspicion.

He realized that this didn't alter the fact that he was going to die—unless he could think of something fast. Ballard looked at his chronometer; he now had less than two hours.

In spite of this, his mind suddenly calmed and became clear. First he'd have to think of all the possibilities of getting into the *Minnow*, then allot only so much time to each possibility. There was the welding torch, the heat-beam, a pneumatic jackhammer, and miscellaneous hand tools. Surely with that assortment he could knock or burn a hole in the ship. All the air would swish out, but there were enough suit cylinders to allow him to take the ship back if he didn't damage it too badly getting in. And Walton would be safe in his sleep-tank; Ballard would see to that by disconnecting the awakener.

• **B**ALLARD SMILED AT THE stars as he bounded back to the hill where the tools lay. Walton had been a fool to lock him out here with cutting, burning, and pounding equipment—and almost two hours in which to use them. Things weren't so bad after all.

He decided to try the welding torch first. He crossed over to the almost-completed blinker tower and picked up the torch and power-pack, then from a tool box he selected a cutting nozzle.

Carefully, so not to exert himself and waste oxygen, he glided down with his gear to the aft section of the *Minnow's* hull just forward of the tubes where the skin was thinnest. As he ignited the torch, he was

aware of what a temptation it was to drain off all the oxygen contained in the power-pack into his own cylinder. Quickly he went ahead and applied the torch to the skin of the ship. Ballard glanced at his chronometer: An hour and a half to go. Good. Fifteen minutes would be long enough to tell whether the torch would cut through the skin or not. If it would, then he could use the rest of the time in cutting the hole.

After the first five minutes he turned the nozzle away and examined the spot where it had been applied. Not a mark.

Six minutes went by. Then seven, eight, nine—

Again he looked at the skin; still no change.

Three more minutes went by. Ballard felt sweat break out on his face as he pulled the torch away for a third time. For a moment—his eyes still blinded by the glare—he could see nothing. His heart sank. Then he detected a faint red spot with a whitish center. *It was working.* Three more minutes and the hole would be started. He turned back the nozzle to the glowing spot. Then with dismay he watched the torch sputter and go dead. Frantically he pushed the activator button—

Stunned, he finally noticed that the power-pack read empty. Walton had nearly exhausted it on the blinker tower.

Ballard glanced at his wrist. He still had an hour and fourteen minutes.

He didn't smile at the stars this time as he went back up the hill. Things didn't seem ironic any more, merely dangerous. He loaded the heat-beam with its larger power-pack onto the equipment platform and slowly dragged it behind him down to the ship.

An hour and two minutes left. He went to work adjusting the beam to its maximum intensity; then, moving it as close to the hull as possible, he turned it on full force.

Time seemed to have stopped. Twice in one minute Ballard glanced at his wrist, expecting to see a lapse of ten or fifteen minutes. Only

five minutes had dragged by; he now had just fifty-seven left. His spacesuit suddenly began reminding him of a coffin. With superhuman effort he jerked his thoughts away from suffocation and back to the job.

Forty-five minutes to go. *The beam wasn't going to work.* The sudden realization cut into Ballard like a knife. He should have known that in the first place; a beam meant for plastic wasn't intense enough for the skin of a spaceship.

THIS TIME AS BALLARD once more climbed the hill, the stars seemed to be smiling at him. But not with friendliness. They seemed to smile *death*.

He got the jackhammer all the way down to the ship before a devastating thought struck him. He'd forgotten that the hammer had a cracked 5R bit; it would fly to pieces on the diamond hardness of the hull.

He sat down, stunned at the fact that he'd run out of things to try. The ship lay before him like some impenetrable fortress. Several precious minutes dragged by before Ballard could again calm his spinning brain. He still had forty minutes. Had he overlooked any other possibility of getting into the ship?

Slowly he walked around the *Minnow*, concentrating as he'd never concentrated before. Then as he stepped in front of the drive tubes something clicked: *The main tube was large enough for him to crawl into. If he could remove the recoil plate and hydraulic mechanism, he might be able to burn a hole through the ordinary steel bulkhead beyond.*

Half-bounding and half-running, he returned from the hill with the tool box. After selecting several like-wrench sizes, he grabbed a flashlight and crawled up the tube. He wasted five minutes unscrewing the first bolt holding the plate in place. The second bolt was so corroded he couldn't budge it. Cursing he crawled out and dragged in the jackhammer, hoping the cracked 5R bit

would hold until the bolt was knocked out.

It almost held, flying to pieces just as there was a quarter inch to go. Frantically he somehow managed to knock the remainder out with the chuck of the hammer. But it had taken Ballard five more minutes. *Only twenty-five left.*

He went out and grabbed a crowbar and pried the plate off, recoil cylinder and hydraulic fluid following like a jack-in-the-box. After cleaning out the drive tube he almost lost his reason when he discovered the cable connecting the beam to the power-pack wasn't long enough to reach the bulkhead. Fortunately he found an extension in the bottom of the tool box.

Fifteen minutes to go.

That should be just long enough. He switched on the beam. Now time seemed to race by. At ten minutes to go the bulkhead turned a cherry-red. At five minutes it was almost white. At four, the steel started to buckle. At three—the heat-beam suddenly went dead. The power-pack was empty.

Ballard's reason reeled. He grabbed the crowbar and jabbed at the fast cooling metal.

Too late.

In the one minute he had left to live, Ballard suddenly became calm, reconciling himself to his end. Wearily he crawled out of the tube. At least Walton would be in for a nasty surprise, with the main drive recoil plate gone. And to make sure, he would push it off into space. With one last surge of fury he dragged up the foot thick plate he could never have lifted back on Earth, and started shoving to give it momentum.

Momentum equals velocity times mass. Suddenly he stopped, the plate drifting on ahead of him. Now why had he thought of that? Something from his school days—he tried hard to remember—something about mass...

Mass is a constant. Weight is a variable, but mass is what knocks holes in things—spaceships, for instance.

Just one thing could save him now—momentum. Ballard glanced at his wrist. Twenty seconds to go. Then maybe another twenty from the oxygen in the connecting tube. Not much time—

He bounded off after the still-drifting plate, then began forcing it around in a semi-circle back toward the ship. The recoil plate sluggishly began to move faster as it gained momentum. It started getting ahead of him so he gave it one last push, and it slowly crept away heading straight for the hull. It floated edge-wise into the aft section—and kept on going. A three foot stream of light poured out from the side of the ship.

Ballard started crawling into the hull and the light wavered and brightened. He couldn't understand it. Then it dimmed altogether—

The last of his oxygen was gone.

Dizzily he tried to squeeze through the rip. He kept slipping back...back. There was a roaring darkness all around him, but he could still crawl.

For ages he seemed to be crawling over polished glass—His head crashed into something that clanged hollowly. Some fading portion of his consciousness told him he was inside

the ship—and the clang had been the space locker. Automatically, as though by instinct, he reached up and fumbled with the handle—Then he was clumsily trying to fit a new oxygen cylinder into place...

• **B**ALLARD AWOKE feeling cramped and tired, as though he'd slept all night in a bird cage. He looked at his chronometer, then at his suit air-gauge. No. He'd been out only a few minutes. He got up and crawled into the sleep-tank compartment and disconnected Walton's awakener. Then he went into the control room and looked up the nearest space-freighter lane in the radio call book, and set up an automatic distress signal. He felt as if he were going to pass out again—this time from sheer fatigue. There was still one thing more he wanted to do.

Out of the nose compartment he hauled a small case containing what had caused all the trouble—

Then he crawled back out through the torn hull skin, opened the case and flung every single one of the rotenite nuggets far out into space.

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★ by JIM MOORE ★

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June issue
is now
on sale*

SUPER SPORTS

IN THE BALANCE

The balance of power was now among the various industrial corporations of the world, and Max Larkin, of United Chemicals, had a desperate and delicate mission. Failure would mean open warfare!

By C. S.
YOUNG

LUIGI SAID, "Signor!" Max Larkin opened his eyes, for the thousandth time surprised and grateful for the dazzling brilliance of sunshine. His hammock, slung between two inward-pressing olive trees, was no more than three feet from the sharp edge of cliff that marked his garden's end. Below the cliff Castellmare was a scatter of white and green—the white of sun-bleached stone and the green of orange groves—dropping down in terrace after terrace. The green was thick around the outskirts but yielded more and more to the density of the town; and beyond both green and white lay the enamelled blue of the Bay of Naples. Larkin turned round. Luigi stood deferentially behind him.

Max said, "Well?"

"Someone to see you, Signor Larkin. It appears to be urgent; will you come in or shall I send him out?"

Beyond Luigi the small avenue of cypress trees ran back to the villa, a matter of perhaps a hundred yards. Max could see the leather-coated figure approaching. He said to Luigi, "Too late; he's here. All right, Luigi. You can bring some wine out. The Nobile '89, I think."

The visitor was quite a young man; he looked unpleasantly warm

in the leather jacket tagged with United Chemicals braid and badges; but at his age, Max guessed, the consciousness of his rank would naturally weigh more heavily than mere comfort. He motioned to a chair in the shade of the olive tree and sat back again himself on his hammock.

The visitor said, "Manager Larkin?"

Max nodded. "I was; I've retired now and I don't use the title. Anything I can do for you?"

"My name's Mellin. Hans Mellin. I've come from Director Hewison." He looked at Max reproachfully. "Director Hewison couldn't get you on vidiphone."

Max said, "No. That's not surprising; I had it disconnected. The only business I have to conduct now is collecting my pension and I can see to that by the old-fashioned method of writing letters."

Mellin said, "So he sent me down to collect you; he wants your advice on something."

Max said carefully, "Where is Hewison? If it means crossing the Atlantic..."

There's no law of nature which rules that a "genius" must be a one-sided person; you'll find individual environment-reasons for each case. But, given an environment which does not cripple the too-far advanced, might not our "genius" develop upon many levels simultaneously? And might not such a person, in play, uncover secrets for which "average" intelligences have striven throughout lifetimes?

Larkin raised
his gun
slowly.



Mellin looked hurt. "He's at his place in Austria. I can drop you there in three hours; I've got the gyro round the front."

Max smiled. "I'll go by train. Just give me directions for getting there; they can have a car to meet me at the station."

Mellin said, "But the Director wanted you to come up with me by gyro!"

Max said, "You may know that I did eighteen years on Venus. I would probably still be there if my body hadn't had the good sense to contract swamp-fever and so given me no option but to retire. Anyway, now that I'm back, I'm back. Between the earth and me there will never again be more than eighteen inches." He glanced thoughtfully at the hammock. "Well—thirty six. You run back by gyro and tell Hewison I'll be coming. What station did you say?"

With some bewilderment Mellin said, "Graz."

"Right!" Max said briskly. "Tell Hewison I can be met there. I'll take the eight o'clock Vienna Flyer from Naples."

"Huh?" Mellin's brow cleared. "Ah—the twenty hundred!"

"Yes," Max said. "The eight o'clock. Oh, the wine's here; put it down, Luigi. You'll join me?"

Mellin looked at the tray. "Well, no. I've got to be getting back. But if you could put some in a bottle for me I'll take a nip on the way."

Max lay back in his hammock. "Give Official Mellin a bottle of wine, Luigi. I think last year's vintage would best suit his—ah—palate."

• **M**AX HAD A SLEEPER TO himself on the Vienna Flyer. It was only here, in the southern half of Europe, that railways had survived at all. Transport and Communications kept them going for the tourist traffic but even that was getting slacker. It was just turned

eleven the following morning when he got out at Graz. The car that awaited him was a huge, mother-of-pearl inlaid affair with the scarlet Director's flag on the bonnet. They pulled away from Graz into the hills, effortlessly and almost silently.

Hewison's Austrian place became visible quite a few miles off—the driver pointed it out. It crowned a hill at the valley's head. As the road made its winding and twisting approach to it more details became apparent. They were all more or less disreputable; Hewison had had this castle built, Max remembered suddenly, no more than five or six years earlier. It was an outrageously grotesque marriage of Gothic and Twenty-First Century. Towers beetled at every corner and in between them shot up graceless pylons of naked aluminum. For miles around, there was only one spot where the landscape was not irretrievably defiled—and that was inside the castle's own walls. Max sighed with relief as the car passed beneath the drawbridge.

The room he was shown to was in one of the pylons. He unpacked some of his things, left them to confirm a swift deduction that the Sheraton suite was an ingenious fake, and was congratulating himself on his perspicuity when he was called to lunch. For some weird reason the vast dining hall was done in under-sea green—the long, jade-topped table was surrounded by squat pillars of translucent emerald, inset with replicas of tropical fish. It was made more overpowering by the fact that he and Hewison were the only diners.

The food was good. Max was rather surprised to find that the main dish was Venusian swamp-pig. On Earth, of course, it cost fifty dollars a pound and was prized accordingly, but Hewison knew well enough that it was no rare luxury for a retired Venus Official. Unless... Max looked at his host more keenly. Could it be Hewison's thick-headed way of evoking nostalgia? Hewison looked back at him blandly and helped himself to more.

● AFTER LUNCH, HEWISON led the way into the library for coffee. Olde English, this, with oil paintings of hunting scenes and still-lives that looked bad enough to be genuine. Hewison produced some excellent cigars and rather less excellent brandy. He had still said nothing as to the purpose of Max's summons.

"How do you like the place?" Hewison asked.

Max nodded non-committally. "Very impressive."

Hewison said, "I like it here; I like this library. I think I'll have libraries installed in my other places. I've even been reading books lately. Some very interesting things. There's a fellow called...let me see..."—he wandered over to the shelves and came back clutching a book—"...Korzybski. Something called General Semantics." He looked at Max piercingly. "You ever study it? Says the whole nature of human thought is wrong. It's—it's *thalamical*! Man's got to learn to act entirely by cortex reasoning—he's got to learn to integrate."

Max got up. He walked across and stood beside Hewison who was pawing through the book, presumably looking for a quotation. He began to speak very gently.

"Director Hewison, I did not come here from Castellemare for a little talk about the opinions of Korzybski, or any other Twentieth Century nominalist philosopher. I've earned my retirement and I'm enjoying it. If that swamp pig at lunch was a prelude to asking me to do another job on Venus for you, I'm afraid it was a waste. The Medical Board wouldn't let me back there even if I wanted to go. And I'm quite happy where I am." His voice rose slightly. "So if you've nothing else of importance to discuss I'll catch the evening train back."

Hewison looked at him silently a moment and then chuckled, putting the Korzybski down on a small walnut table. "Well," he said, "let's get down to business then. I don't want you back on Venus—I know about

your medical report. The little job I want you to do for me will keep you right here on this planet."

Max said defensively, "I am pensioned, you know; I don't need to do anything but sit in the sun."

Hewison said, "I'll explain things. First, the political set-up."

"Spare me that."

"This is how it is," Hewison went on. "Thanks to you, Atomics took a nasty beating over their little attempt to stir trouble out of the murky waters of Venus. They're sitting quiet. I don't doubt they're hatching something but we're not very worried about them just now."

"Who are you worried about?" Max asked.

Hewison said, "Genetics Division. I'll have to go back a bit. Twenty years. Remember de Passy?"

Max nodded. He remembered de Passy all right; the man had been Genetics Division's star genius. TV had been full of him the year Max himself had been taking his U.C. Finals. His work on germ plasma had been revolutionary. And then, when he was only thirty-four...

"Gyro crash, wasn't it?" he asked. "In—Vermont?"

"New Hampshire," Hewison corrected. "Very sad." He looked up suddenly at Max. "But unfortunately necessary."

Max said, "You mean U.C. murdered him?"

Hewison played with his rotopen. "Two or three companies were represented," he said. "You see—we had to do something about him. Fortunately he worked with only one assistant who—died at the same time. De Passy was on to something very big; the artificial creation of super-geniuses."

Max said drily, "That seems the best excuse in the world for murdering him."

• HEWISON WAS WEARY

and strangely old. How old was he? No more than eighty, certainly. Hewison said, "Yes. The best reason, the best excuse. Have you thought what super genius might

be? Consider the ordinary genius as we have known him in the past; consider how *one-sided* his gift invariably has been. Newton the mathematician—and Newton the theologian, strenuously working out the size of the seventh horn of the Beast of Revelations. Einstein the mathematician—and Einstein the well-meaning but completely naive social scientist. Outside his own narrow field the genius is on level or even inferior terms to the rest of humanity. That is the way it always has been."

Hewison got up and walked restlessly up and down the fine Axminster carpet. "You don't need telling that this is the managerial world," he said. "And you know how the balance of power is kept—each Company holding its own authority, conducting its own research, co-operating as a free and independent agent with all the other Companies. United Chemicals, Genetics Division, Transport and Communications, Atomics, Hydroponics...and the rest. Now imagine one Company with the services of a man capable of superhuman-brilliance — not in one field of research but in all. Ever since 1900, scientists have been forced to specialise more and more, continually giving up width of approach for the increasingly necessary depth. But imagine someone who could take it all in—the entire field of Genetics, plus the field of molecular and atomic chemistry, plus sub-atomic physics, plus every other branch of science you care to name. With such a man—such a super-man—working for any one Company, balance of power becomes an idle dream. If Genetics had him. Genetics would be supreme. Whether he realized the implications or not, that was what de Passy was after. And that..."

Hewison paused. Max finished for him. "...is why his gyro suddenly, inexplicably failed, at a height of, if I remember rightly, four thousand feet. I see. Well, you did it; you

didn't bring me up here to get it off your conscience?"

Hewison said, "We thought we'd finished the job. We smashed his lab pretty thoroughly, but we may have overlooked something. You see, de Passy was married. It never occurred to us that he might have—experimented on his wife. Even when she died six months later in childbirth, it never occurred to us. Lately, however... There have been rumours. We can't tell what reliance can be placed in them. Genetics Propaganda are quite capable of spreading things abroad that might be useful to them in future bargaining. And they know where to plant rumours so that we shall be certain to pick them up. But—true or false—the rumours say that de Passy's wife had a child—and that child is the first, the only one of de Passy's super-geniuses."

Max sat back. He said, "What about Contact Section? It's their job, isn't it?"

Hewison said patiently: "It would be, normally. But unfortunately we've been working in close alliance with Genetics during the past ten years—mainly against Atomics. I always wanted to hold some of our agents in reserve for this sort of eventuality but I was over-ruled; they were too scared of Atomics. Now there isn't a man capable of handling the job who isn't better known at Genetics than he is at home. You, Larkin, are the one possible ace up our sleeve."

Max said, "And what am I supposed to do? Suddenly develop a passionate interest in chromosomes and ask Genetics to take me on as a lab boy?"

Hewison came and stood in front of him. "Does the name 'Linstein' convey anything to you? He was in your college class; you knew each other fairly well. He retired from Genetics a few months ago. He's your line."

Max said, "And he isn't going to be suspicious at my sudden desire to renew his acquaintance?"

"No. Because he is going to approach you. He's a philatelist. A

special exhibition of rare stamps is going to be arranged for Naples in two weeks' time. His hotel reservation is going to be unfortunately mislaid; at the right moment he will be given your name and address."

● **L**INSTEIN HAD been small and talkative with a career in front of him. Now, in retirement, he was still small and more garrulous than ever but there was a note of disillusion in his rambling talk. At any rate, the fears Max had had that it might be difficult to keep at his tail without attracting suspicion were swiftly proved groundless. Linstein, like most men with a grievance, wanted friends and had none. Without any urging he converted his overnight stay at Max's villa into a week, and a week after that, and another week. When at last he tired of Italy, he insisted on returning the hospitality he had enjoyed. He and Max sailed from Naples, docked at New York three days later, and that evening were ensconced in Linstein's penthouse apartment.

The first three weeks had proved entirely unprofitable. Linstein talked quite a lot about Genetics but only once did he throw something out that might have been a pointer. It happened on the second day of their renewed acquaintance. Flushed by a good Orvieto wine Linstein had raised a vaguely threatening toast 'to the future of Genetics Division'. Scrupulous not to excite suspicion at so early a stage Max had refrained from following it up. And since then there had been nothing. Nothing, that is, but perfectly ordinary revelations of staff politics; all of which, it seemed, had been designed to the sole end of frustrating Linstein's work and promotion.

Now, in New York, Max was dragged at his heels with an ever-deepening suspicion that the whole thing was a huge wild-goose chase, a mad idea of Hewison's without any basis in reality. But he recognized the impossibility, from his point of view, of being any the less thorough for that reason. A doz-

en times he started small hares that might lead Linstein towards the fatal indiscretion. And a dozen times, apparently quite unconscious of the intent, Linstein diverted them to harmless holes. At last Max resorted to crudity. After dinner, one evening in the second week of his stay with Linstein, he doctored his host's brandy with Vita, the pale, tasteless, paralytically intoxicating concoction brewed by Old Kajan in the swamps of Long Province, Venus.

● **L**INSTEIN LOOKED AT Max carefully for a moment and then, waving his cigar hysterically, burst into a paroxysm of drunken mirth. Max smiled with him sympathetically. Wiping his streaming eyes, Linstein spluttered. "It's funny, Larkin. That stuff you put in my brandy...damned good brew wherever you got it. Venus?"

Max nodded. "So you saw me? It...loosens people up; you'll tell me what I want to know now, won't you?"

Linstein laughed again. "That's the funny part. I'd have told you any time you asked. Go ahead—ask me."

"Right. First, is it true that de Passy left one successful experiment behind him—his own child? Have Genetics got one of the super-geniuses he was trying to create?"

Linstein nodded owlishly. "Right enough."

"And they realise what they are handling?"

Drunkenly, Linstein tried to strike an attitude. "World supremacy! That's what we're handling. That's what we've got. We're not forcing anything. They mature late, you know. At present the super-genius is still...playing with toys. But inside ten years... You'll see."

Max said softly, "Third and last question—where is he?"

He waited patiently for Linstein to stop laughing. At last, gasping, Linstein said, "You see, Larkin, we've been expecting all this; in fact, we were planning on it. I was retired to attract this sort of thing. It's been damned funny watching the last month."

Max said, "You haven't answered my question."

"I can't! They wouldn't have dared use me for this job if I knew anything more than I've told you just now, Larkin. Every room of this apartment has a vidiphone camera relaying back to Genetics H. Q. Sight and sound. They suspected United Chemicals might have another agent up their sleeve—now they know." The high electric buzz of the apartment's front door sounded through the air. Linstein said muzzily, "They're coming for you, Larkin; I'm afraid they're coming for you."

He watched in smiling intoxication as Max went to the door. His succeeding amazement was rather pitiful. The two figures in U. C. uniform tramped in behind Max. Max said, "The camera's concealed in that fifth plastic globe. This room was empty yesterday evening. Duplicate that record and fix it in for tonight. You jammed the direct transmission all right?"

The taller of the two men nodded.

"Unshielded radio ray sculptor two apartments along. It jammed everything for three blocks. There'll be a hefty fine to pay."

Out of a throat suddenly dry Linstein said, "You're letting me hear all this. Does that mean...? Are you going to...?"

Max smiled sadly. "I never knock off an old college pal—when I can avoid it. We may not be biologists but we're not completely dumb at U. C. Just a little deep hypnosis. You'll wake in the morning and you will remember that we spent a cheerful evening together at the Museum of Modern Art. I don't think even Genetics have cameras fixed there. All right, Karl, take care of him."

● **B**EHIND Hewison on the vidiphone screen, Max could see the rolling Austrian valley, through an open window. He finished telling the Director what had happened.

"So," Hewison commented briefly.

"That's how it is", Max confirmed.

Hewison roused himself. "You did

well enough, Max. More than well enough. I don't think there's any more you can do. Even if Genetics doesn't tumble to you, you've sucked Linstein of everything he could tell us. And we could hardly put you onto a fresh line; they'd have you taped from the start. Contact Section will have to take over again. I hope they can pull something out of the bag."

"I don't rate their chances high", Max told him. "Genetics are no slouches. They know what they've got and they're watching it pretty well."

Hewison nodded towards the screen. "Yes. I know."

Max said casually, "You don't want me back in Europe just yet, do you? I've got one or two things I'd like to attend to."

Hewison's head jerked up, hopeful and apprehensive.

"Max", he said, "if you've got a line on your own, tell me—tell your old friend, Duncan Hewison. Don't go running your head into anything without telling us." He paused. "If anything happened..."

Max grinned. "...There might be no way of getting the information back to my old friend, Director Duncan Hewison. Don't worry. It's practically nothing—the vaguest of ideas. If I get on to anything solid, you'll know. So long now."

He un-garbled, opened circuit, and switched off on the expostulating Hewison. Then, thoughtfully, he walked out of the vidiphone booth and walked over to a magazine stall.



He left Linstein's apartment the following day, deriving some amusement from the look of bewilderment on Linstein's face when he said goodbye. He left the now fashionable Brooklyn and took a room in a broken-down Manhattan hotel. He quite easily identified the Genetics man who moved in after him the next day, and took an early opportunity of chatting with him. Marvel Publications were offering him a juicy contract for a book to be called

Eighteen Years among Venusian Savages. He played the late-blossoming author to the last dregs of boredom. The Genetics contact man took it glassily but doggedly.

Max stayed in the hotel more than a fortnight. By day he went from publisher to publisher, blatantly canvassing his projected autobiography, and in the evening told the results to his manfully sympathetic acquaintance. An awful lot of publishers were passing up the chance of the century; he felt he was going to spite them and take the Marvel contracts...

At Marvel—Managing Director a certain William Renfrew whose son, in Long Province, Venus, had had reason to be grateful to Max Larkin—he took the lift to the roof and stepped into the waiting gyro. Renfrew stood beside him. He said, "He's a good enough double, then?"

"Excellent", Max said. "I've been wearing those dark glasses ever since they turned on the full heat wave. Have him go for his lunch to the Central Automat. After that, it doesn't matter; I'll have all the time I need."

William Renfrew said doubtfully, "Are you sure you know what you're doing? I could get Hewison for you on the office vidiphone..."

Max said, "This is serious; it's serious enough to get me up in a gyro—something I'd sworn for the rest of my life. And it's too serious to let Hewison in on until I'm ready and willing. If anything goes wrong... You know the time limit."

He rocked the gyro up in a dizzy, perpendicular take-off. Beneath, Renfrew's face became a blur; the whole roof shrank, the shining new roofs of Brooklyn split up into glaring, alluminalloy chasms, then slowly coalesced again into a uniform gleam of metal.

Max headed north. Away on his left he saw the earth erupt in scarlet flowers of flame, flinging skywards the silver seed that was the morning passenger liner—New York to Venusberg. It was a fascinating sight. It had fascinated him in just the same way more than thirty years

ago when, a small boy, he had lived in his parents' home on the edge of the spaceport and known his future with a passionate certainty. He was going to be a space navigator. Strange, he thought now, that that had been his ambition rather than the more immediately romantic pilot. Probably that slight aberration had been part of the conviction that it would come true. But his father had been posted to Europe and the years had gone by in which certainty's edge was dulled. There was nothing in the idea now but ludicrousness, and a faint envy for that lost single-heartedness. Instead, Max reflected, having earned his retirement, he was volunteering for another profession admired by the very young—that of secret agent. But he had never admired it himself, and he felt now only a sick anxiety to finish a distasteful job.

• **H** E ARROWED DOWN carefully to the small township, made the one necessary inquiry at the small mail-office, and lifted the gyro clear again. He followed the rough trail he had been given. Just under the brow of the hill he parked the gyro and walked up through the leaning rocks. The guard, leaning on his Klaberg rifle, watched him as he approached.

The guard said, "Sorry, bud; private ground. Atomics compound. You better turn back to the village."

Protective mimicry to the last detail. Smart, Max thought. He said, "Where are the others? I want to see you all together."

He flashed the small badge, an ingenious duplicate of the one that had been found on a thin chain round Linstein's neck. It was gold with *GD* in large letters in the centre and the smaller superscription round it—*Contact Section*. That had been a useful find. The guard nodded respectfully and flicked the small dial on his wrist to the *Attention* call. Two other figures came out from the small hut in front of the larger, squat building built back into the hill side. A third followed them from the main building itself.

They all wore plain uniforms; the third, Max noticed, was a woman.

They stood, close grouped, in front of him.

"About the patient..." he began.

He lifted his right hand. Very gently he shook it, breaking the small capsule as though he were pronouncing a benediction on them all. The four figures stared at him as the faint mist swirled out from his hand, blanketing him first and stretching on towards them. Still watching they slumped, like collapsing dolls, into limp paralysis.

Max stepped round their bodies. He walked quite slowly past the guard hut and up to the main building. It was quite a sizeable affair. It enclosed an inner courtyard, with a swimming pool and tennis courts. He walked through the hall and paused at an open door, looking inwards. What he saw made him halt, for several seconds, before he advanced.

The figure on the divan turned round as he entered the room. Max nodded gravely. "Good day", he said. "Good day, *Miss de Passy*!"

• **H** ELEN DE PASSY SAID: "It was bright of you to find me."

Max was wondering what he had really expected to find. A misshapen monstrosity with a bulging head and weak, helpless limbs? Something like that. Irrational, of course, but the mind was, in so many ways, irrational. Certainly not a girl—though there was again no reason why it should have been more probable for *de Passy* to leave a son rather than a daughter.

And now...a beautiful girl. She was beautiful, all right; strong and straight-limbed with the figure of a young, vigorous and lovely woman. It should not affect things, but it did. Her face was full under a good but not distorted forehead; her hair fell to shoulder-length in thick coils of silk. Only about her chin was there a suspicion of weakness, of attractive weakness. He tried to find the key to her appearance, stumbled, and found it. Placidness. It was not a

quality one would associate in advance with super-genius.

He became aware more clearly of what she was saying, and found an answer.

"It was something Linstein said."

He remembered the purple walls of Linstein's ornate apartment, and the drunken boasting. "He said that the super-genius was still... playing with toys. I guessed what that meant. Linstein was a scientist, and for scientists toys can often mean the arts. It might be that the super-genius had turned first towards Keats and Shakespeare and Beethoven rather than towards Darwin and Planck." Max paused. "The artistic genius needs to publish, to toss its talent into the world's lap. I inquired discreetly; I found half a dozen brilliant writers working through different publishers. I found that each of them used the accommodation address of a certain New Hampshire village. After that it was easy."

Helen de Passy said, "And the guards?"

Max said, "Leothine. It's the stunning vapour used by the Martian trapping plants. You can immunise yourself with half a dozen microscopic doses. They'll be out for... perhaps six hours."

She nodded. Max said softly, "I still don't see why they let you publish. I saw it as a long chance, and it came off. But I don't understand why they let you."

She smiled. "Who reads books? A few hundred thousand. And, of course, for them these things were toys; they never thought of anything but scientific genius. You humour genius... when you can do it without inconvenience. And their bureaucracy defeated itself, too; they granted permission for me to publish non-revealing material pseudonymously from the village. They didn't expect me to be prolific enough for seven different personalities—you missed one—and the little people didn't see the danger."

Her words echoed in his ears. "...for them these things were toys. They never thought of anything

but scientific genius...' Was there a solution here—an easy way out? His pulses leaped, but he said evenly, "Did they make an even bigger mistake? Your—genius. You will know. Is it purely artistic?"

She looked at him and he felt for a moment like a child campaigning against the inscrutable, triumphant world of the adult. In that look all incredulity fell away. He knew what she was, and wanted to worship.

She said, "No." She smiled. "You chose your time well. I've only just begun to get—interested in science. At the moment I'm studying Ren-thal's Theory of Polar Optics."

Hope faded.

• **MAX SAID DESPERATELY,** "What do you think's going to happen to you? Were you willing to be used by Genetics? Did you know their plans?"

She stood up. She was wearing a spun-glass dress that went with the curves of her body. A strand of her hair danced briefly in a breeze from the open door.

She said, "You can't imagine how lonely I am. Right from the start I've been lonely." She looked directly at him. "Can you imagine how you would have felt if from infancy you had been tended, watched, guarded by—apes!"

In the last word there was misery and the glimpse of an alien remoteness that frightened him. She went on bitterly. "Did I know their plans? How could I help knowing them? For years I withdrew from them, writing words and music that to them were nothing, knowing that I had as strong a hold on them as they had on me. They could not force me; they dared not threaten. Only lately"—she hesitated briefly—"only lately have I come to realise that—they are not my responsibility."

She lowered her voice on the last five words.

Max echoed, "Your responsibility?"

"Yes," she said. "Imagine again. You are a child, with apish guardians. They suspect your nature and your power to put weapons into their

hands. That is all they want from you—not truth but power. How long, knowing what is best for them, will you withhold those gifts? How long before you forget mercy and responsibility and give them what they ask for?”

She paused again. “My father—” She hesitated over the word. “My father only thought of the fruits of genius. To him, it was a weakness that Einstein—mathematics apart—was a gentle, simple man. He did not realise that without that simplicity, Einstein could not have lived in this world. A man can advance beyond his fellows in one field of knowledge and still have points of contact with them. For me—for the super-genius”—she spoke the word bitterly—“there can be no contact; it is hard to prevent pity turning to contempt.”

Max said, “If he had lived...there might have been others. Have you thought of carrying on his work?”

She said, “They warned me about that. It was your people who killed him but Genetics would have done it themselves if you had failed. They wanted a sport to give them power; not a new race to supplant them.”

Max said, “What are you going to do?”

She smiled dreamily. “Renthal's Polar Optics. There's an interesting line that can be applied fairly easily. The human retina can handle practically any light impulses in the fabric of the normal space-time continuum—any reasonably economical concentration. But Renthal's warped

light is rather a different matter. I can rig it up into a pocket transmitter.”

She laughed. “The apes want matches; it isn't my fault if they burn each other's eyes out with them.”

Max said, “In a moment or two I'm going to call a U. C. Director on your vidiphone. I can have U. C. planes here to pick you up within an hour. I'll see you have a place of your own where you can do what you want—without interference. You can duplicate your father's work. You can have...children like yourself.”

He looked at her, framing this last appeal.

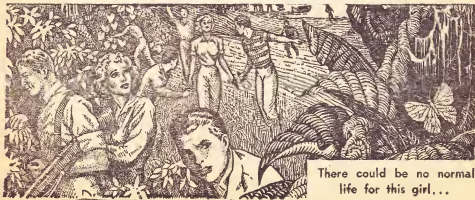
“Will you come with me?”

She said indifferently, “I'll come. But not for those reasons. Would I be left alone? Would I be allowed to populate the world with my own kind? You know your superiors. Are they any more anxious than Genetics to be dispossessed?”

She smiled. “Given the means to gain supremacy, would they refuse to take them?”

• **MAX THOUGHT OF THE** whole tortuous balance of power between the Companies. He had fought for U. C. when first Atomics and then Genetics Division had seemed to be gaining the whole of that power. Did that mean that he wanted United Chemicals to have it?

He knew she was right. A pocket transmitter radiating blindness? He could imagine Hewison's logical ar-



There could be no normal life for this girl...

guments that such a thing must be kept—for use, of course, only in a sudden emergency. And then, inevitably, the emergency. He could imagine Hewison's rationalisations as U. C. pushed itself inexorably above the other Companies. For himself, too, there would be the inevitable corruption of power—power, in his case, to ignore the world more and more completely, to withdraw into the past and leave the squabbling very far behind. Hewison would pay him well for a prize like this. All Tuscany, if he wanted it, for a pleasure ground; Naples for a footstool. For a moment of madness he thought it might be worth it.

He said to Helen de Passy, "Don't you care at all what happens?"

She shook her head silently. In the courtyard outside a chiming sundial flung bells of sound through the unemphatic air.

Max said, almost pleadingly, "That analogy of yours—between men and apes—it isn't sound, you know. There may be a correlation of intellect between you and us and them, but there's more to it than that. An ape is not evil, and not good; Men are both. Because you are what you are you have seen the evil, but the good exists also."

She looked at him indifferently. "You are arguing away from reality. There is no alternative; there is nowhere I could go where I would be unnoticed and left alone. Men would find me, because they want the power I can give them."

He said: "At least...you could renounce one part of you. Music, literature, painting—these neither blind nor destroy; you could keep to them."

She said, "Genetics allowed me to do that because they thought I was still immature. Would Genetics—or any other Company—permit it once they suspected I was withholding things? There are means of persuasion and"—she flushed faintly—"I am sensitive to pain. You must face facts. I may be a freak, an accident, but I exist and men will use me. For me it doesn't matter, because in my loneliness I can find comfort only

in playing with the toys of my mind. For men those toys may be weapons and misery, but that is not my concern. The only thing you can do is serve your Company and take your reward."

● **SHE GESTURED TOWARDS** the vidiphone. Reluctantly, automatically, he moved towards it, switched on, set the dials. The only thing? He watched Hewison's face swim up into its usual, anxious lines. Hewison said, "Where are you? What's happening?"

Max said slowly "I found de Passy's child. A girl. You needn't worry now."

Hewison said shrewdly, "Where? I'll have men to pick you both up within an hour."

"Don't bother," Max said. "I've got a gyro. And Miss de Passy"—he hesitated very briefly—"was unfortunately killed in the skirmish. I just wanted to reassure you."

He saw the chagrin mounting in Hewison's face as he switched the vidiphone off.

Helen de Passy said softly, "Do you think you can hide me?"

Max shook his head.

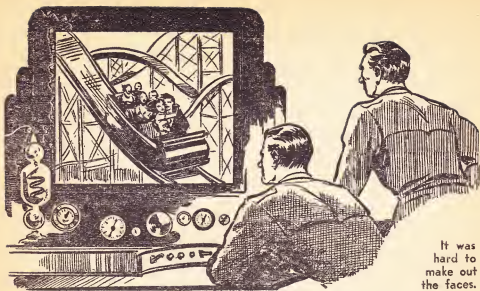
"No," he said. "I couldn't hide you any more than I could hide the sun."

She said, without concern, "Then? Are you looking for a higher bidder?"

He took the pocket Klaberg from its holster and weighed it carefully in his hand. A fugitive sunbeam licked at its metal.

He said, "There is only one bidder for you now. I don't like doing this. I'm a squeamish man and it doesn't help that you are a young and lovely woman. But I know that man lives always on the very edge of tyranny and I know that liberty cannot survive...if you live. In a way it's better for you, also."

●
He always remembered how she stood, a lonely goddess, inscrutably smiling as he raised the weapon against her.
●



It was
hard to
make out
the faces.

Remember the 4th!

by Noel Loomis

(author of "The Lithium Mountain")

Slim Coleman's brain-finder worked all too well!

THIS WAS A warm day in August—a very warm day. Slim Coleman, my partner in detection work, says the sun is ninety million miles away, but this day it must have sneaked up pretty close. You could even see the heat waves coming up off the sidewalk. You can't fry an egg on the pavement in Fort Worth, though, because you can't stay out in the sun that long.

I mopped my brow, slung the water off my fingertips, and went into the lobby of the National Bank Building. The washed air made it cool and nice in there, and I slowed down to enjoy it. But one of the elevators came down, the door slid open, and the first man to get off was Swanberg, the building manager—our landlord—all dressed up in

striped trousers and a fancy vest and wearing a high wing collar and a genuine cravat. He looked impeccable, immaculate—and cool.

I wheeled and marched back outside into the sun. Slim and I were three months behind with the rent, and I figured the only reason Swanberg hadn't ordered us out was that he just hadn't gotten around to it. I didn't want to run into him. If we could have paid our rent I wouldn't have been carrying ham sandwiches and a bottle of coffee in my coat-pockets up to Slim Coleman while he worked on the Brain-Finder.

The heat almost smothered me after the coolness of the lobby. Damn that guy Swanberg, anyway. He was always so perfect, so com-

If, as has often been contended, the brain contains a complete record of all events the individual has experienced, consciously or otherwise, then a mechanical means of exploring someone's past might be found. It would show the discrepancies between the most reliable memories of events, and actual sense-impressions received at the time, for example. But few people would like such a device, and those few might like it much too much!

pletely unaffected by the weather, so supercilious and so cold, so mechanical. You knew he'd never had any trouble and never would have, because he would never be swayed by anything but cold logic. It's only we humans with sentiments who get in trouble.

It was his untouchableness that griped me. He was so inhumanly perfect he always made me feel rough and uncouth. You know how it is. If I could just get something on him to throw off that complex, I'd be happy even if we did have to vacate. I guess I spent my time day-dreaming about Swanberg—Swanberg wearing an old-fashioned night-cap, Swanberg slurping his coffee, Swanberg sleeping with his socks on—anything human.

What wouldn't I have given to have a picture of him in the roller coaster the way I had been the night of July the Fourth, with a perfectly strange, perfectly gorgeous, slim blonde throwing her arms around his neck the way that one had around mine. I was willing to bet he had a big, hefty wife at home who made him step.

I shivered whenever I thought about that blonde. She was the kind I would have liked to marry, only one like that was away out of my reach. I didn't have much education and I didn't always know what to do around a real high-class female. That's why I had been riding the roller coaster alone.

• **WELL**, THERE WAS nothing for it now but the coal-chute. A truck was backed up to the sidewalk and two very black-faced men were pushing coal down a steel chute through a manhole in the sidewalk. I ducked into the alley, unrolled the bundle under my arm, and threw out a pair of khaki coveralls. I hated this, but I did it anyway; I had to. We couldn't afford to have my suit cleaned every time I went in through the sidewalk, so I got into the coveralls and zipped them up. I watched around the corner. When the truckers raised the steel bed, I walked up to the open

hole in the sidewalk and dropped in casually.

I'm a short man anyway, a little on the chunky side, and that coal-hole was like a furnace. The sweat poured down my back and chest and the coal-dust poured into my nostrils. I got out of there as fast as I could and took the freight elevator to the twenty-second floor. I went through the hall, unlocked the door, got inside, and locked it again.

"That you, Doc?" came Slim Coleman's deep voice.

"Yeah." I held the coveralls out of the window, slapped the coal-dust out of them, took off my damp suit-coat and laid it on top of the desk, got the electric iron out of the desk-drawer and plugged it in. Our sign said *Coleman & Hambricht, Private Investigators*, and we had to maintain appearances, but I wished we could afford a store-bought pressing. I brushed my pants, but they were damp, too, so I took them off and laid them out on the desk-top, over some papers, with the creases pinched tight. I mopped my brow and went into the other room.

Slim Coleman looked up from a work-bench covered with wires, tubes, condensers, and all kinds of electrical gadgets. He had a soldering-iron poised above something that looked like a forty-eight-tube radio. He had deep, deep brown eyes that always looked through everybody, but Slim was a hundred-per-cent. In fact, it was his loyalty that had us behind the eight-ball now. If he had dissolved partnership instead of offering to pay the damages the time I fell from a second-story window and went through a skylight into a whole tableful of expensive orchids—but no, Slim paid it all—twenty-two hundred dollars before he got through, because the cold air ruined a lot more orchids. And I hadn't even gotten the evidence I was after. (No, it was just happenstance that I fell from the bedroom window of a movie star.)

"What luck?" said Slim in his husky voice.

"I served them, but look, Slim, I hope you get that Brain-Finder go-

ing pretty quick. Not that I mind crawling under the length of three pullman cars and cutting my ankles on the cinders to serve divorce papers on Tom Ellingbery, who's worth a million. Not that I mind doing all that for a measly five bucks, but when I have to come through the sidewalk in the summertime to duck the landlord—"

Coleman's face lighted up. "The Brain-Finder is ready for a tryout," he said. "Shall I show you yourself the night of July the Fourth?"

Well, partly because I guess I didn't have much real faith in the gadget, I said "Okay," and went to get the four ham sandwiches and the coffee in a milk-bottle out of my coat-pockets. That was why I couldn't take off the coat when I put on the coveralls—for fear of spilling the coffee. Then I groaned and ran for the desk. There was a brown puddle spreading on the desk and soaking up my coat. I very nearly said "Damn!"

"I've got your brain wave-length," Slim was saying. I started mopping up with my handkerchief while I hung the coat up to dry. "Now, all I have to do is—come here, Doc!"

I put the sandwiches on the bench in front of him, but for once Slim didn't even reach. He looked at me and his deep-set eyes were burning. "We are going to be the greatest private investigators in history," he said. "In fact, we'll *make* history. Doc, we'll be the most important men in America."

I should have been more enthusiastic, but things were going so badly—"I don't care," I told him, "about being a great man, if I can just quit ducking the landlord. I want to walk in under his nose and not be scared of him. If you want to fill my cup to overflowing, just let me use that thing long enough to get something on him."

SLIM WAS ALREADY turning dials. Tubes were lighting up. The set was humming. Pretty soon he pointed to a screen, and I damn near lost my breath. There on a screen about twelve by

eighteen inches, big enough so there wasn't any mistake, I saw myself on the night of July Fourth, just as I bought one ticket for the roller coaster.

I guess my eyes stuck out a foot, for Slim was looking at me with that kind of sad smile. "Roller coasters," he said gently. "Got enough, Doc?"

I gulped. "Plenty. Cut it off, please." In the screen I saw the blonde just behind me, and I didn't want Slim to see her put her arms around me when the roller coaster went over the dip.

Slim smiled and snapped a bunch of switches. The lights in the tubes went out. "Think what this will mean in criminal prosecutions, to be able to follow a man in the past. Present-day testimony will be archaic. The courts won't have to take anybody's word for anything; they can follow a man and watch him in the past."

"Judge Monday wouldn't admit that kind of evidence," I pointed out.

"Naturally not. It will take twenty-five years to get this kind of evidence admitted in court. In the meantime, we'll have to go easy. But we can make millions, just by bluffing. When we *know* that a man was playing poker in Jones's basement until six o'clock Sunday morning, then we can bluff and put it over. Just so we don't tangle with a real tough guy the first time. For instance—sh! Somebody's at the door."

Slim ran to the door while I ran for my pants. I ducked back into the other room and got them on. I heard the voice. It was a man's voice, and I had heard it before—just recently. I peeked out. Yes, it was Tom Ellingbery. I stayed quiet.

"A pot-bellied little guy just served divorce papers on me," he said harshly. "I got off the train and came here. A friend of mine sent me; I want your services."

"Yes," said Slim.

"Here's a hundred-dollar bill," Tom Ellingbery said. "Start shadowing my wife; get something on her. I'll give you five thousand to get

something—ten if it's necessary," he said with a slight leer.

Slim gravely picked up the C note. "We don't do business that way," he said; "but if your wife has been misbehaving we'll find it out."

Ellingbery was a big man with a sharp go-getter look about him. He stared hard at Slim and Slim stared back. Ellingbery's expression didn't show anything; then he left.

SLIM LOCKED THE DOOR after Ellingbery, and I took off my pants and set up the ironing-board on the desk. Slim went back to adjust the dials on his machine.

"This gadget is a sort of super-sensitive radar," he said as it warmed up. "I can tune it to your brain-waves and pick you up anywhere within forty miles or three months."

A purple indicator began to wink. "It proves I've got brains, anyway," I pointed out.

"Yes, your waves come in at a frequency of approximately 1,832,956,000. That's as close as I can tune it so far, but that's plenty close enough. There are other characteristics, such as power and damping and height of crest and so on, that make it selective enough to pick out any one person in the United States if it could reach that far."

"And then you can see everything I do?"

"No, I can see only what you see with your own eyes."

Then I must have been staring at the blonde. I held my breath when I asked, "Can you tell what I'm thinking?"

"No."

I breathed again.

"I can translate what you say into language, though. Something happens when I throw two hundred and twenty volts into this bank of tubes. As near as I can figure, it creates a 'time-warp'—which doesn't mean much of anything objectively. I don't know how it works; I couldn't even duplicate it. I suppose some high-powered electronics engineer could figure it out, but I don't want anybody but you and me even to

know about it. What I'm interested in is what we can do with it."

"What I'm interested in," I said, "is how much money we can make with it."

Slim looked at me with his great burning eyes while the steam rose from under the iron on my pants.

"You're about to find out." The ground-glass screen slowly lighted. A new bank of tubes began to sparkle and then settled down into a greenish glow. Slim turned dials, and there was the figure of a woman on the screen.

"That," said Slim, "is Mrs. Tom Ellingbery."

Well, of course I couldn't see her face. She was playing bridge, apparently. Her hands looked nice. The woman at her left said, "I hear you've filed suit against your husband."

Mrs. Ellingbery reached for a king, but her fingers were nervous. She played a six instead and lost the trick. "Yes," she said quietly, "I have." Her voice was sad.

I waited a minute. Then, "How did you know how to tune in on her?" I asked Slim.

"I got her wave-characteristics when she came up the other day to get us to serve the papers," he said. "I got Tom's today while we were talking. The machine was all set and the recording needles made a permanent record."

I swallowed. "Can you get the landlord's characteristics too?"

Slim held up a sheet of ruled paper. "Got his already. I was just practicing; I got him when he was trying to hammer the door down yesterday."

Suddenly I felt a deep peace. I had the landlord in my power, now, and I didn't have to hurry; I could take my time.

But Slim notched me down. "Get this hundred changed," he said. "Give the landlord fifty and then have the telephone connected again."

I took the hundred.

"Get some more sandwiches, too. We'll be here late tonight."

Well, the landlord wasn't as sarcastic as I had feared. He de-frosted

slightly when he saw the fifty. Now we owed him only two hundred. I knew he was probably going to put us out on September the first, but I soothed my hurt feelings by imagining him walking around in his shorts. There is nothing else that will so undignify a man. But before long—in fact, as soon as I could get to the Brain-Finder while Slim wasn't watching—I'd get the facts.

● **WE WATCHED MRS.** Ellingbery for four straight nights and days. She went visiting; she played bridge; she shopped. She never did give more than a second glance at any man, and she didn't talk to any man over the phone. We could see her only when she looked at herself in the mirror. That was enough.

We followed her like two bloodhounds, from the time she ate breakfast until she went to bed at night, but Slim turned the machine off when she sat down to remove her stockings. Slim always was a gentleman.

We went back in "time"—fast. Flashes here and there. But Mrs. Ellingbery was like Caesar's wife. On the fifth day Slim called Tom Ellingbery and told him he was dropping the case, that his wife was above suspicion and it wasn't worth while to watch her. I was glad, but Tom Ellingbery swore; anyway, he said he'd send a check for another hundred. Then Slim sat back and looked at me. "Now," he said quietly, "we'll turn this thing where it belongs."

I'd been hoping he'd go out for a sandwich, now that we dared to use the passenger elevators, so that I could sneak a preview of the landlord biting his fingernails in seclusion, but no. Slim fixed his deep eyes on me and said, "We'll see what Tom has been doing recently. Do you realize he hasn't been in the picture but once in five days?"

Tom was it, all right. We trailed him that night to a big apartment house across town. Yes, it was a blonde, only this one had had con-

siderable help from a bottle of peroxide....

Slim made a deal with Mrs. Ellingbery's lawyers. We were to get five triple-o's if Mrs. Ellingbery won. So Slim spent the week-end trailing Tom for the past three months while I wrote it all down like a chronological history of the war. I was tickled over July the Fourth. On July the Fourth, Tom and the bleached blonde started out with a popcorn picnic and wound up—you guess. Riding the roller coaster! I could just imagine what old Judge Monday would say to that; that little scene would be worth half of the property settlement.

We were short on time. Some way or another Tom Ellingbery had rushed the trial, and it was set for August 30. We turned over our notes to Mrs. Ellingbery's lawyers and sat back and waited. Private investigators never go near the courts unless they have to.

At four-thirty that day the telephone rang. Slim listened, then he hung up. "Tom has got a couple of shrewd, tough lawyers," he said. "We have to go to court. Tom isn't admitting anything and he isn't taking any bluffs. He demands proof."

"Well," I said, "for five M notes I'll tell everything."

● **SLIM WAS WORRIED.** HE talked to her lawyers, Youngquist and Rubicam, that night. The next morning we were both in court. It was direct examination. Slim identified himself, then he was asked: "You have investigated Tom Ellingbery's activities over the past three months?"

"Yes." Slim was very self-composed.

"Did you, on the night of August 26, observe him going into an apartment house at this address?"

"Yes."

And so on—but never a word of where Slim was when he saw all this. Very clever, I thought, but when I looked at those sharp-eyed young fellows at Tom Ellingbery's table, I knew it'd never get by.

Presently Mr. Youngquist said, "You may inquire." I held my breath. But one of the young fellows looked up and said, "Are you going to put his partner on?"

"Yes," said Mr. Youngquist.

"With that understanding, there are no questions of this witness, your honor."

I jumped as if I had sat down on an electric griddle. It was plain even to me; they figured Slim was pretty sharp, so they'd wait for me, and in the meantime they wouldn't tip me off by asking Slim any questions. I wished I could have held my breath for about three days.

I got along all right with Mr. Youngquist. I was careful not to say anything about where I had stood or sat or walked. I said, "Yes, I followed him," because I did follow him with my eyes. Then Mr. Youngquist turned to the young fellow and said, "You may inquire."

The young fellow got up slowly and looked at me easily and gently, but it was still August. I was sweating. I knew it was coming. I looked at Slim. Slim was sweating too. I looked at Mr. Youngquist. He wiped the perspiration from his forehead.

"You say," the young fellow began softly, "that you and your partner followed Mr. Ellingbery from sometime in June?"

"Yes."

"You testified, I believe, that on the night of July the Fourth, Tom Ellingbery and this girl were at the amusement park?"

"Yes."

"And I believe you have cited some eight or nine dates up to the fifteenth of July."

I looked at Mr. Youngquist and I was astonished to see his face the color of bleached muslin.

"Well, did you or did you not?"

I looked at Slim. He was puzzled, too. Finally I nodded.

"Will you say it for the record, please?"

"Yes."

"That is to say, you are now testifying that you followed Mr. Ellingbery on each of eight or nine occasions prior to July 15, and each

time with your partner at your side?"

"Yes."

"And always at Mrs. Ellingbery's request?"

"Yes." That was a nasty question, but it had to be answered yes.

"Were you here in court yesterday?"

"No, sir." I would have said, "No, your majesty," if it would have helped.

"You didn't hear Mrs. Ellingbery testify that her suspicions were first aroused when somebody reported to her that on July the Fourth Tom Ellingbery was riding the roller coaster with another girl?"

I wish I could have jumped into the Brain-Finder and gone back about two weeks. I would have walked through the sidewalk while the coal was being poured.

"No," I said finally.

The young fellow looked triumphantly at Mr. Youngquist, who looked as if he would like to be buried in ashes up to his ears.

"That's all."

Mr. Youngquist rallied and put Slim back on the stand. Then there was a recess. Mr. Youngquist and Mr. Rubicam and Slim and Mrs. Ellingbery and I went into a big huddle out in the hall. "That's what comes of messing around with imbecilic things like this Brain-Finder," Mr. Youngquist moaned. "Why didn't we stick to straight law?"

"Because we couldn't win that way," Mr. Rubicam reminded him. "We didn't have any real evidence."

Well, they decided the only chance to win the case was to have Slim tell about and demonstrate the Brain-Finder. Slim didn't like to do that; but we needed those five G's. That afternoon he told. The next morning we lugged it into court and set it on a table with the screen facing the judge.

● **T**HERE WAS A CROWD IN court that morning, thanks to a news story in the morning *Herald*. Slim groaned; crowds aren't good for private investigators. I pricked up my ears when I marched Mr.

Swanberg, our landlord, as austere as striped trousers could possibly make him, but with a beauteous blonde in a pink dress, clinging as if she was afraid he'd get away. That opened my eyes. Maybe the old ice-berg was human after all, to rate that kind of devotion. Maybe he did have an occasional moment of abandonment when he would lick the butter from his knife. If we ever got through this mess I was going to find out. "That's Mrs. Swanberg," Youngquist said to Slim.

I looked his wife over in my best professional style. I thought I'd seen her some place, and a detective is supposed to remember faces, but I couldn't quite place her. Anyway, there were now three blondes mixed in with that courtroom—and that's a lot of blondes. Mr. and Mrs. Swanberg sat down at one side opposite the jury-box where they could see the screen of the Brain-Finder as well as the judge. I suppose Swanberg had read the story and wanted to see what we were up to in his building. Mrs. Ellingbery sat across the counsel table from me. She was a winner if there ever was one.

Slim went on the stand. He demonstrated the Brain-Finder very feebly—that is, innocuously. It was obvious that Youngquist was scared to death of what might happen.

And again Tom Ellingbery's lawyers passed up cross examination of Slim. I knew they were waiting for me.

They were. "Do you understand this machine?" one asked me scornfully.

"No, sir."

"You know how to work it, don't you?"

"Yes. I think so."

"Do you mean to tell this court that you can adjust the dials and gadgets on this thing and see what I was doing last week or the week before?"

I tried to be cautious. "If it's plugged in."

"Okay, we'll plug it in."

He invited me to step down and turn on the switches. I looked at

Slim. He nodded. After all, there was nothing else to do. I went.

Some of the tubes crackled and then settled down to a steady green glow, and one bank showed purple. Then the lawyer said, "Now, do you mean to tell me you can tune this contraption in on a man's brain and find him anywhere in the past?" He sounded completely skeptical.

"Within three months," I said defiantly.

"For instance, you testified that Tom Ellingbery was riding the roller coaster on the night of July the Fourth with the girl who has been named in this case. You saw this on this screen?"

"Yes."

"Can you tune it in again?"

• **W**ELL, I KNEW THIS WAS all preliminary. It would take something absolutely dynamic to convince Judge Monday that the Brain-Finder was the real thing and not a fake. So I wasn't worrying—yet. "Yes," I said, and set the dials to Tom Ellingbery's brain-waves. I picked up Tom and the bleached blonde just as they stepped into the roller-coaster car, and followed them around the ride. It wasn't very sensational; she screamed and hid her eyes and grabbed Tom around the neck. Standard technique.

Then the lawyer said, "Can you pick up your own brain-wave on this thing?"

"Yes."

"What were you doing on the night of July the Fourth?"

"I was—" I swallowed. "I was riding the roller coaster."

I think somebody snickered.

"Can you show us?"

"Yes," I said cautiously.

I began to adjust the dials. Again the amusement park flickered over the ground glass, as seen through my eyes. I was in line. I put my money on the counter to buy a ticket. I saw a slim white hand reach up to the window from my left and I started to turn. Then it hit me!

That gorgeous blonde! That girl who had thrown her arms around

me in the car a minute later. That was Swanberg's wife.

I looked around at them in the court-room. I knew what was happening on the screen. I hadn't looked at her face until she got into the car after me. Mrs. Swanberg was leaning over, now, watching the screen. One arm was slipped through the landlord's elbow and she was surreptitiously but affectionately patting the back of his hand. Swanberg himself looked completely blissful. What had she been out there alone for, that night? Well, no telling. Maybe he'd been out of town and she'd felt like doing something childish. Certainly there was no meanness or deceit in her face. She was in love with him. And he, in spite of all his austerity, was obviously in love with her.

I looked out the window. There was no doubt that the fame of the Brain-Finder by now would be all over town. Within a week we'd be flooded with work—high-priced work. We'd take only the very best cases, the highest priced, the least messy. We'd pay the rent. We'd eat in restaurants instead of carrying sandwiches. In another three months we'd be rolling in money—and almost without work. If we wanted to work hard with the Brain-Finder, we'd make millions. I could maybe find myself the right kind of girl to marry.

● I LOOKED BACK AT THE screen. I had just settled myself in the seat of the roller-coaster car. A pink dress came into my field of vision on the right. Yes, sir, this demonstration would do it. This, and those to follow. Whatever Judge Monday might say, there would be an appeal, and we'd have to take the thing to the Supreme Court, and how could any judge ignore it if Slim could show the judge himself working on his pet corn the night before? We were about to be what is vulgarly but happily known as "in the bucks."

What would happen to Swanberg? I remembered how I'd always pictured his wife as unattractive, and

all of a sudden it made me feel kind of ashamed. He had certainly shown good taste in his choice of a wife.

Well, pretty quick now I could afford to travel in that kind of company.

I wondered what would happen when Swanberg saw his wife throwing her arms around me on the roller coaster. I guessed maybe he wouldn't be cold; he'd be jealous. Well, a man with a young and beautiful wife—somehow it kind of got me. I mean that sort of calf-like happiness. He loved her and he felt secure in the knowledge that she loved him, and—well, you know how it is.

Gosh, how I wanted that money. Here it was within our reach—the thing we'd worked so hard for, the reason I'd crawled under pullman cars and gone through the sidewalk and sneaked in to evade the landlord—all so Slim could keep working on the Brain-Finder. He had it now. Slim didn't know how to duplicate it, but one was all we needed. That one was worth a fortune.

I looked back at the Swanbergs, sitting there so close together. Swanberg hadn't really been tough with us. In fact, he'd been lenient. Three months was a lot to be behind. No, I guess the only thing I hadn't really liked about him was the fact that he was always so perfectly dressed and so cool while I had to go through the sidewalk on a hot day in August and then press the sweat out of my clothes with a flat-iron.

I looked at the girl. She was nice. She hadn't been doing anything out of the way that night. She certainly hadn't made any sort of pass at me. And they were in love.

I guess I had no business being an investigator. I looked at the judge, watching every move with his sharp old eyes. I glanced at Slim Coleman, sitting there, looking a little puzzled, his eyes deep and burning. I tried to ask Slim to forgive me. I looked at the screen. The roller-coaster car was pulling up to the top of the first hump.

I took hold of the Brain-Finder. It was heavy, but I picked it up and

held it over my head, then I heaved it onto the floor, and it was nothing but a mass of loose wires and broken glass.

A woman screamed. Youngquist fainted. Slim came running with a question in his deep eyes. Tom Ellingbery's lawyer was triumphant. The judge pounded for order....

THIS IS FOUR DAYS LATER. Tom Ellingbery and his wife made up. Last night's paper showed them on the roller coaster. He was quoted as saying: "All I wanted was to ride the roller coaster." And she had said: "Boys will be boys."

Slim brings me four ham sandwiches and coffee twice a day. He

got acquainted with the blonde that Tom Ellingbery was riding the roller coasters with, and they went out to the park and had five dollars worth of rides the night that Tom Ellingbery paid Slim the five G's. (Tom said it was worth that much to have his wife back.) And do you know whom Slim and the blonde ran into at the Park? Mr. and Mrs. Swanberg. First thing I ever heard of a man in a tail-coat riding the roller coaster.

In fact, everybody's got a blonde but me, and everybody's riding the roller coaster but me. I'm not riding them now. I got thirty days for contempt of court.

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TODAY AND TOMORROW

NOTING the discrepancy of opinion between book-reviews that have appeared in this magazine, and those seen in various of our worthy competitors, a reader writes in to inquire, "Is it your policy to be 'different'?", and goes on to note: "For example, yours was the only science-fiction magazine to run an unfavorable review of *Shadow on the Hearth*, and you were the only one I saw who thought *Voyage of the Space Beagle* was worth serious discussion.

"Okay—so maybe they're all out of step but Lowndes. Only I'd like to know just what your qualifications might be. If five or six other so-called 'critics' say 'yes' on a book and you say 'no', why should I pay any attention to you? I'll give you one thing—your comments make fair enough reading, so maybe I shouldn't complain, huh? But I *would* like to know just the same."

Fair enough, as Pegler might say; I'll answer the questions in order, as well as I can. (1) Is it my policy to be "different"? Answer: No. I call them as I see them; if no one else sees them that way, then my review is "different". But I don't read the other reviews, look carefully to see if they all lean in one direction, and, if they do, slant mine another way. I try not to read other comments on any book I have for review until after I've written my own opinion—then, naturally, I'm curious as to whether anyone else agreed.

(2) What are my qualifications? Answer: That's a tough one, friend, because I've never heard of any school, or organization, or whatever, passing out credentials for "critics". As nearly as I've been able to make out, from experience in reading the works of various book reviewers and music critics, it's a game where any number can play. But that isn't answering your question: I'll state, first, that I have no academic degrees of any nature, then go on to list what I think should be the minimum qualifications of any science-fiction book-reviewer worth spending eyesight on.

It goes without saying, that he should have read science fiction long enough, in sufficient varieties of expression, to have a fair idea of what has been done in the field—so that he won't call some theme or plot-device or whatever, which has been used many times before, a startlingly new idea. He should be aware of the general informed opinion as to what constitutes good technique in the field, although he need not accept any of it as final. (A number of the better writers have expressed their views on this.) He should have some comprehension of scientific methods, and as much "scientific background" as possible.

But, and far more important, he should be reasonably familiar with literary standards in general, and the world in general as it exists outside the covers of science-fiction magazines and books.—so that, for instance, he won't mistake what is merely a first-rate, rip-snorting adventure story

(no matter how smoothly written) for "literature". He should not be under the delusion that science fiction is, *per se*, a "higher" or "more advanced" form of expression than has ever existed before, and that a "good" story becomes a "great" story when the science-fiction label can be fitted on it.

Nor, on the other hand, should he decide that science-fiction cannot bring forth "literature", simply because few examples can be brought forth for exhibit.

It goes without saying that if I did not believe I had the minimum qualifications, I'd confine my opinions to personal conversation.

(3) If five or six others say "yes" on a book, and Lowndes says "no", why should we pay any attention to him? Answer: It all depends upon the reasons given for the ayes and nays. A critic can only suggest why he thinks you might find this or that book worth your while; he cannot *make* you read one book or *prevent* you from reading another—But when the list is so large that few could read all the selections, even if they could afford to buy them all, the critic can perform some service by steering you toward the best and warning you away from the worst. If so-and-so recommends books which, upon reading, you find were generally up to the level he described, and turns thumbs down on books which, upon reading, you found less impressive, or downright poor, then the chances are that you can depend upon him. He won't be "right" for your taste every time; no one person could be.

And, a critic should be able to offer some insight which you may not have yourself—either in general, or in specific relation to a particular story. He should be able to assist the reader toward raising his own standards of judgement and general comprehension. He cannot confine himself to the general level of "public opinion"—not if he is going to perform any service to readers and to the art itself.

A noted poet and critic once mentioned, in advice to neophytes; "Pay no attention to the opinions of a critic who has not achieved any notable works himself." I do not think that is 100% sound, but it's a good principle, even though it would tend to disqualify me. (I haven't written any stories which I'd put on the "outstanding" lists on science-fiction, even though some have received kind words from disinterested readers.)

(4) Your comments make fair enough reading... Answer: Some years ago, an uncle of mine had a small print-shop, in a small town. He brought out a little advertising pamphlet, weekly, wherein he'd scatter general opinion of his own. It wasn't any great shakes, but the advertiser did pay for itself, and leave a few dollars over expenses each week. Still, *Unc* was a bit discouraged, until one night when he left the usual stack on the tables at the local post office, he saw a couple

(Turn to Page 89)



Down to Earth

1/ Future

Columbia Publications
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This department is for you, the readers, where you can discuss science and science fictional subjects in general, and your opinions of *Future* in particular. We will pay two dollars for each letter published, regardless of length.

To the Editor & Mr. Blish:

I am one who does not know if dianetics is valid. But I am also one who is very busy trying to find out. May I make a few remarks?

Consider that first airplane ride you took. You accepted aeronautics on the evidence of what you could "see" and what "everybody knows".

No?

So you first studied the reports of scientists—the signed, sealed and authenticated records of qualified experimenters.

Then you accepted it on "authority".

No?

So you first set up a laboratory and tested each and every principle.

No sir-ee! You did none of these. So let's stop quibbling about "evidence", since the only evidence you considered was the evidence of your own eyes and mind.

Now consider that operation you had. What evidence did you first demand that it wouldn't certainly kill you?

And how did folks ever find out that the love-apple is really a tomato?

Let me state this opinion: you will not and cannot satisfy yourself about dianetics by the kind of scientific evidence you demand, for the simple reason you haven't that much time. If you cannot imagine the colossal effort required for a rigorous

proof of Hubbard's researches, then you need something and you need it very much.

You can—step by step—satisfy yourself about the therapy—but you won't, for you are a treader of the trodden trails, not a pathfinder; you are afraid of the jungle of your own mind, wherein only you can go.

You will—eventually—accept dianetics on the evidence of "everybody knows."

J. R. Feeney

1844 Harvard

Houston 8, Texas

Dear RWL:

Mr. Feeney to the contrary, I can imagine, very well indeed, the "colossal (sic) effort required for a rigorous proof of Hubbard's research". My sole complaint with Mr. Hubbard is that he did *not* make any such effort before announcing that his theory was "scientific fact".

It is no part of my duty, or yours, to verify dianetics. That's Hubbard's job, and his alone. I do not recall ever having been shown an airplane and asked to fly it in order to prove that it was safe. This, in effect, is what Hubbard has asked the layman to do.

The layman may very properly send Mr. Hubbard back to his laboratory to develop the evidence. There is nothing unreasonable, or unusual, about asking a

scientist for evidence, after all. What is unusual is finding a self-styled scientist who admits he hasn't any evidence and asks you to do the work for him.

And, by the way—Mr. Feeney's letter is itself an excellent indication of the reason why no so-called "testing" of dianetics by eager laymen is ever going to be worth a hill of beans.

James Blish

Dear Editor:

As a tentative answer to Buryl Payne, I would like to say that under one condition, and only one condition, would his answer be right.

If space were completely empty of friction-causing matter, (which science is beginning to doubt) and if there were no celestial bodies of any kind near to offer resistance or aid to the force that you were employing to maintain an acceleration of 1 gravity.

Actually, that is not the case. There are some pretty potent forces at work in the universe, as Friend Buryl can see by just noticing the long range effect that our own sun has on the planet Pluto.

That's not quite all. Mr. Payne has failed to say what his speed-of-light machine is in relative motion with. Mr. Einstein and I have never gotten together long enough for him completely to explain his thesis. (I've never actually seen him, but his pictures are very impressive.) However, if space is empty, I can see no reason why you wouldn't have to use each and every influential heavenly body whose influence you might be under at the time as your gauge for relative velocity.

You know, this could get complicated. By the time you reached the speed of light, you would be some 2.84×10^{15} miles out into space. I'll let you astroagate; at that speed, I wouldn't have time.

I hope this will prove a potential answer to the problem. Me and my slide rule are tired.

*R. T. Townsend
Q-7A Polo Village
Tucson, Arizona*

(Mr. Payne seems to have stirred up quite a bit of interest, as you'll see in other letters further on; we'll sit this one out.)

Dear Editor:

I have been following your editorials and comments on dianetics with a great deal of interest. In some respects I agree with you; but there are a few things I would like to point out.

To begin with, on the matter of evidence, a book is merely a *report* of evidence, not the evidence itself. Even if Hubbard had included detailed case histories (and Hubbard says that two such histories were omitted by the publisher to keep the cost down), it would still be up to outside persons or organizations to check those reports to find out if they were true, or merely fiction to add greater authenticity to his science.

If any person—no matter who—comes out with a new theory or science, it would still be up to outside sources to check his results and see if it were true or not. Thusly, no book is published with enough proof that interested scientists would read the book and say, "Dr. (or Mr.) X's proof is so complete in his book that there is no reason to question it. It is completely proved; therefore, it must be so. Instead of wasting time checking, let's use this new science." And what will using it do except verify or discredit the science, no matter how much proof?

To me, it seems that proof in a book is merely a matter of degree. From the weakly-backed assertions of Hubbard to the mathematical equations of Einstein. And no one is so naive that they would accept statements or statements of evidence without checking this personally to satisfy themselves.

At one time, logic concerned itself with nothing more than weighing a new discovery in light of what the last great Authority said along such lines. If it came out favorably, it would be accepted; if not, it made the discard pile. This is known as the "medieval approach", but is now somewhat dated.

I am a college graduate, and in the course of getting out of that institution, I took some courses in psychology. I have also read some of the researches of Salter, Freud, and some lay books on psychiatry. Psychiatry agrees well with dianetics—or vice versa—up to a point. But Hubbard goes farther; he attributes engrams as the "single source of aberration and psycho-

somatic ills" and gives you a technique for their cure. I have tested dianetics for six months now, and to date dianetics "works" just as Hubbard says it should *to the smallest detail*. However, let me say, to the point where I am, psychiatry could more or less work as well. I am still working to achieve the ultimate proof: the clear.

Now I am aware that *any* psychotherapy will work sometimes, but all of my friends are doing honest, sincere auditing; they are getting the same results Hubbard says you should. I have seen occluded perceptions turned on; asthma cured, or recessed, or temporarily gone—whichever term you prefer; chronic stomach pains of 17 years gone; a woman given the use of a back that had been partially paralyzed for years. I have encountered dozens of pre-natal engrams. I suppose this in itself is not proof, but I like to think that it's pretty good validation. Or is this *all* merely mass persuasion?

I could go on and on, but what is the use? Intelligent application of Hubbard's technique will produce the initial results. The question is: does one have enough perseverance to continue until they pro-

duce a clear—or hit the blank wall that psychiatrists eventually come to?

Only until that happens to you personally, will *you* have satisfactory proof.

As for myself, I'm having a hell of an interesting time auditing.

Alfred Bomar, Jr.
519 Jefferson Street
Delano, California

(1. Granted that a book is not, in itself, evidence in this framework, the fact remains that the author was very cagey about the subject of evidence in "Dianetics". Many, or most, scientists *want* to have their "discoveries" checked; they believe in them themselves, and believe that outside investigators will come up with the same answer. Thus, one should reasonably have expected to find a thorough listing, in the back of the volume, of sources and records for the interested party to examine. But in "Dianetics", not only is the material presented in such a manner as to imply that the reader *need not check because it has all been proven beyond doubt*, but the author offered very little encouragement to the person who would like to examine the evidence.

2. Quite true: use of a theory will tend to prove or disprove it—a tree is still known by its fruit. But what is *known* of the "mind", and of psycho-therapy has
[Turn Page]

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proved that the critter isn't something to fool around with. One of the most important propositions in dianetics is precisely the one for which there is little or no evidence—or, at least, there was little or none at the time the book was published, namely, that *dianetic therapy cannot hurt you*. Obviously, only experience can establish this proposition positively, negatively, or—what seems most likely—somewhere in between. Moreover, there is another proposition in the book, also diametrically contrary to the *known* and *proved*: namely, that anyone with the ability to read and memorize the instructions is competent to handle psycho-somatically “sick” people. *Dianetics is the only branch of psychotherapy of which I have heard wherein the Therapist is not required to take the treatment, and be pronounced sound by its own standards, before being sanctioned as a Therapist*. Well, since any sadist, paranoic, etc., outside of sanitariums can pick up a copy of “Dianetics”, then hang out a shingle and take on patients, we’ll probably know sooner or later if this proposition about “it can’t hurt you” is true. However, one can imagine somewhat safer ways of testing theories. Oh yes, I am aware that the reader is warned that the Auditor’s Code must be adhered to: however, how can the patient tell? And what about perfectly “honest and sincere” persons who want to take up Auditing, with honorable intentions, but who are psychologically incapable of refraining

from taking advantage of the situation, who cannot *help* but tamper with the patient? The world is full of such do-gooders.

3. The world is just chock full of people naive enough to accept statements, and/or statements of evidence, without checking them—particularly statements outside their given field—when such statement: we have a 100% guaranteed, fool-suasiveness about them, and when they are the kind of statements that people want to hear. In this case it’s the statements: we have a 100% guaranteed, fool-proof cure for all your troubles.

4. One “dianetic clear” won’t prove very much, since the claim is that *everyone* whose brain has not been damaged, or who was not born with various parts of the brain missing, can be “cleared”. However, even one “clear” would be more than has been seen after nearly a year of experiment. (That is, as of February 15, 1951.)

5. Mighty is the power of suggestion.)

Dear Mr. Lowndes:

As an ex-newspaper editor, I have little regard for readers who rush letters “to the editor” at every excuse, and often with no excuse other than that they hope to see their names in print; but after 25 or more

Did you think the cover was better than last issue's?

as good as last issue's? not as good?

Did you think the artwork was better than last issue's?

as good as last issue's? not as good?

Did you find the stories better than last issue's?

as good as last issue's? not as good?

Were there any stories in this issue you did not like?

Which letter in "Down to Earth" did you find most interesting? (Name of the letter-writer.)

Comments

.....

.....

years of reading fantasy fiction (some allegedly based on "science"), I feel that somebody must protest what seems to be a trend—an insistence by readers and a few physics and chemistry students that fantasy (or science fiction) must adhere closer to scientific facts.

What are scientific facts? Every age for thousands of years has seen scientific "facts" of the preceding age set aside as the guesswork of persons groping for knowledge. For the last decade, I've been writing training films for the Air Force—and we've had to, even in that short period of time, revise previously alleged "proven" theories: such as ballistics and the action of the air stream upon plane surfaces. How, then, can we say with finality that *any* accepted theory of today will stand up tomorrow? Because scientists offer laboratory proof? Ha! Can a color-blind person prove to other than another color-blind person that "red" is other than as he sees it?

Burl Payne, in his letter in the March *Future* illustrates a point when he asks if a rocket, in free space, continues acceleration after the exhaust gasses have reached peak velocity. Since no one knows what

"free space" actually is, or whether such a condition is possible, how can his question be answered? Personally, if we are held to our orbit by the attraction and repulsion of planets, suns, or stars, I'd say that at no point in space would an object be absolutely free of reactions from some other cosmic body; and, even if it were, it, in itself, would set up an orbital attraction for any other object not large enough to attract it. Eventually, a space ship might find itself a small planet, or the core of a thick layer of cosmic dust and meteorites, before it could cover even as much space as between the earth and the moon. I could write hundreds of words describing my theories of weight in space and why space ships should have no fear of speeding bodies in "free space"—if "free space" is possible—but why waste my time and yours? I can't prove my theory, any more than some of the engineers can prove what will happen should we try sending a rocket to the moon. According to the known quantities, it should be possible, eventually—but what about the unknown quantities? They're just that—unknown.

[Turn Page]

RATINGS ON THE MARCH ISSUE OF FUTURE

Each letter, or preference coupon, which indicates how the stories were liked is counted. A first-place or "liked best" vote gets one point, a second-place or "liked next-best" vote gets two points, and so on. The total score is divided by the number of votes cast for each story—which varies, for everyone does not always list or comment on all stories—to give the pointrating. The lower the point score, then, the higher the story rates.

1. Incomplete Superman	2.83
2. The Gray Cloud	3.37
3. Age of Prophecy	3.35
4. The Last Lunacy	3.56
5. The Lithium Mountain	4.44
6. Martian Homecoming	4.71
7. What is "Evidence"?	5.62
8. Woman's Work is Never Done!	6.18

(And an original to Judith Merrill for the best-liked letter in "Down to Earth")

TODAY AND TOMORROW

of characters pick up copies. Unk waited at the stamp window, listening for comment. One of them leafed through the latest copy, muttering, "Wonder what the old fool has to say this week?" Unk told me, then, that he walked out feeling five years younger; so long as anyone was interested in seeing what the "old fool had to say," he'd keep plugging away at it.

For the next issue, H. B. Fyfe leads off with a novelet entitled, "This World Must Die", wherein we find a society which would be dear to the heart of Gilbert & Sullivan's Mikado. For the punishment to "criminals" in this society is to command them to commit necessary crimes. And this is a story of a group of convicts sent out to do mass murder—but very vitally necessary murder. H. Beam Piper is with us again, this time with a novelet called "Genesis"—not a brand-new idea, but a good story. And, with many apologies, we'll have the fine novelet by Walter Kubilius, originally planned for the present issue, on hand in the September book. "The Black Ant" is one which I think you will find worth the extra wait.

Meanwhile, if you haven't seen the May issue of *Science Fiction Quarterly*, you may be missing something—the letters show a high percentage of satisfied readers, and the majority can be right, sometimes.

—RWL

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So it all boils down to one point: as long as the characters in a scientific fiction story meet their problems with what we have come to accept as a reasonable degree of reaction, why worry too much about "facts" and "formulas"? I don't care whether my hero flew or jumped to Mars—but I am interested in what he does after he gets there.

Now, as to the controversy about covers: I think the only editorial sin is using a sexy semi-nude that has no bearing on any story in the magazine. However, the editorial excuse that readers buy fantasy magazines only because of the racy covers won't hold water. What about the unprecedented sale of the book "Conquest of Space"? And why aren't astronomical and hypothetical illustrations of heavenly bodies (rather than female bodies) capable of attracting a buyer's eye? I cannot accept either extreme: that sexy covers alone will attract the casual reader, or that any reader should be ashamed of covers because they display a little more feminine flesh than he's used to seeing on the street.

While I don't object to my letter being published (if you feel that you absolutely *must*), nor to the use of my name (in case it should be), this is not being written primarily for publication. Mainly, it's a protest against the smart-alecks who like to show off their scientific "knowledge" by jumping on every author who deviates a wee bit from the current path of doctrinal logic.

Alphia Hart
Box 386
Rantoul, Illinois

(At this point, I have to remind myself that *Down to Earth* is supposed to be the *Readers'* department, since this is just the type of letter which would inspire me to several pages of eloquent ignorance. But, this time, I'll let the rest of you sound off first, adding my golden words later. In the meantime, a warm glow in the direction of Mr. Hart for just the kind of controversial opening that I like to see in this department.)

Dear Mr. Lowndes:

I simply have to burst out with a cheer for James Blish and his "What is Evidence?" article. That, brother, is laying it on the line. I've read Hubbard's "Dia-

netics" rather carefully, and it seems to me that he does what a good science fiction writer does—sticks to accepted theory until he gets to a jumping-off place—then he jumps to end all jumps! The idea is, again like science fiction, interesting; but his insistence that anyone can be an auditor without danger to the patients is another way of saying that anyone can practice medicine, fire a gun, build a house, etc., without instruction, danger, or chance of failure. Pure personal observation! My own theory is that there's nothing anyone can do without a little teaching—including walking, talking, or anything else. I liked Blith's fairness in dealing with Hubbard's extremely broad statements.

Poul Anderson's "Incomplete Superman" has some very nice writing. The plotting seems fragile, and you know the outcome pronto. The machine gimmick in the ending was, to me, anticlimatic. Homo superior, as delineated, is far too brainy to need or want it.

Judith Merrill's "Woman's Work is Never Done" drives me to doggerel:

*She will not boast of vict'ry won,
Lest she should live to rue it;
A woman's work is never done
Because she doesn't do it!*

On the reprint buisness—I'd rather not have them mixed with the new. There are some fine yarns that should be made available to the newer fans, granted. I'm one who cut teeth reading the old *Argosy All-Story Weekly* by filching it out of a neighbor's garbage can. I suffered over "Girl in the Golden Atom" and "Palos of the Dog Star Pack" physically. Mother didn't think they were nice, and backed her opinion with peach tree switches. It didn't cure me. I still love fantasy and science fiction. The stories I like best are those that start with an idea, and provide action to illustrate that idea. Bradbury is a honey with that kind of thing. He says so damned much without saying a word directly—it's two things in one and who (cliche) doesn't love a bargain? That's what I get in *Future!*

Alice Bullock
812 Gildersleeve
Santa Fe, New Mexico

(We aren't opening the flood-gates to "po'try" or "doggerel", but this one [Turn Page]



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struck me as being appropriate as well as
amusing. I'll let in one, and only one,
come-back, if someone sends in one which
strikes me as being both an adequate re-
tort, and equally amusing.)

Dear Editor:

The March issue of *Future* converted a
cold, rainy afternoon into a pleasurable
experience for me. Yours was the first
science-fiction magazine I had read in a
long while. Once I was a regular reader,
but lately I have drifted out of the habit.
I just happened to see the magazine at
the newsstand, and it seemed just the thing
to chase the gloom for a few hours. It
succeeded very well, and I am looking for-
ward to the coming issues.

I won't attempt to criticize or rate the
stories. I liked them all, but I did think
that all the stories were too short. I would
vote for increased length, especially in
the feature novel, even with a correspond-
ing increase in price.

I was interested in the questions posed
by Mr. Buryl Payne, and I immediately
whipped out the old slide rule to check
his figures on acceleration to the speed
of light. I had to blow the dust off an
old physics text to find the formulas, but
my answer checked with his. I also agree
that space travel is "set" because a ship
would continue to accelerate even though
the exhaust gasses had reached peak veloc-
ity. The exhaust velocity is, of course,
related to the rate of acceleration, and
when this velocity reaches a maximum,
the rate of acceleration would not increase
further. But there would be a definite and
constant acceleration maintained.

This fact may be readily established by
a consideration of the forces acting on the
ship. During the initial period, when the
ship is taking off, the velocity of the ex-
haust gasses exerts an equal and oppo-
site force on the ship. This force is pro-
portional to the velocity of the ex-
haust gasses, and as this velocity
increases, the force exerted on the
ship increases. The ship is accelerated ac-
cording to the formula: *Force equals Mass
x Acceleration*. Since the mass of the ship
remains constant, the acceleration varies
directly as the force. So long as the force
is increasing, the acceleration increases.
Therefore, when the exhaust velocity
reaches a maximum, the acceleration also
reaches a maximum, but it does not revert

to zero. The acceleration merely stops increasing and is maintained at a constant value.

This argument is applicable both to free space and the initial escape from gravity, with the qualification that during escape, some of the force exerted by the exhaust gasses goes to overcome gravity and wind resistance; so not all of it is used to accelerate the ship. At least, that's my opinion.

Arthur Hough
5406 Woodrow Avenue
Austin, Texas

(Humm, I don't want to seem pedantic, but it sounds to me as if you're confusing acceleration and velocity; if I remember physics, acceleration—by definition—refers to an increase in velocity. So it would seem to follow that when "peak velocity" has been reached, the question of "acceleration" is shelved for the time being. Also, it would seem to my limited comprehension that the mass of a space-ship, particularly a rocket-type, is one thing which couldn't possibly remain constant. The fuel being expelled violently from the rocket tubes should have quite a bit to do with the mass of the ship as a whole—so that it seems to me that the mass will decrease as the vehicle goes along.

You may fire when ready, readers.)

(This belongs in the "Why Editors Eventually Run Amok" department. A Mr. Burnett sent a most interesting letter to us, wherein he questioned Noel Loomis' figures in "The Lithium Mountain". We therefore sent the letter to Mr. Loomis' agent, requested a forwarding, and invited an answer. "But please be sure to return Mr. Burnett's letter," we concluded. Some days later, we received, via Mr. Loomis' agent, the reply—but not the original letter. Mr. Loomis had returned the letter, yes, his agent told us, and it had been put in the envelope along with the reply; sorry, I responded, but there wasn't anything in the envelope I received but the Loomis letter, and carbon to same, which he included for me to send to Mr. Burnett, if I wished.

Followed several expeditions through darkest files; good men and true lost in the search; national debts increase as huge allotments are made to finance the project—but failure. So, we owe Mr. Burnett space in this department, and we extend apologies now. Meanwhile, since the affair doesn't seem to have been one of personal prestige, we'll present Mr. Loomis' letter for its own value.)

Dear Mr. Lowndes:

Thank you for forwarding to me Mr.
[Turn Page]

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10^{72} integers would have been printed by now. (I have the clipping on this, but I must have misfiled it, for I can't seem to locate it now.)

My original notes on "The Lithium Mountain" show that one gram of LiH mixture, fully converted, would produce 2.2×10^{18} ergs of energy (Gamow); 130,000,000 tons equal 2.52×10^{13} grams; total energy output of the mountain would be 5.544×10^{31} ergs; total energy output of the sun per second is 3.8×10^{33} ergs; I did some extrapolation and guessed the portion of the sun's radiation effectively intercepted by the earth would require thirteen seconds of contact to equal the LiH output.

As a long time science fiction reader, I have a suggestion. A writer has the responsibility of presenting his ideas against a factual background, and most writers observe this, but the reader, too, has a responsibility: he should remember that stories are first of all for entertainment, and he should not allow supposed or even real inconsistencies to interfere with his first enjoyment of a story. Science fiction should be read with two minds. One is the ordinary, normally emotional mind that all of us have, and the other is a science-loving and critical mind; the emotional mind is the one appealed to by the imaginativeness of good science fiction. When I read a story, the emotional mind has charge, and the logical mind has to stand back and look over the other's shoulder; the logical mind is not allowed to interfere until the story has been read and I have enjoyed it. That being settled, the logical mind has its say. (We are assuming that the story is interesting as a story.) Sometimes the logical is practically foaming at the mouth, but its turn comes later. After the story has been enjoyed, then the logical mind is free to complain, and it is quite proper to sit down and write a burning letter; this makes editors tear their hair, but it keeps writers on their toes. Naturally if any writer should be guilty of repeated inconsistencies, this procedure would be subject to change.

I personally go to a great deal of trouble to keep the science sound in my stories, or, as Mr. Burnett suggests, at least within the realm of possibility. Undoubtedly I shall make an error now and then, but I don't contemplate any rash statements;

[Turn Page]

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when I say "thirteen seconds", you may be sure I think I have a basis for naming the time. Just for instance, I believe I have the only complete set of Gregorian calendars in the world from 1752 to 3200 AD. That's over fourteen hundred calendars, and they fill an entire looseleaf notebook, nine to the page. I made them myself (I'm a printer) after endless calculations and at a total cost of about a million bucketfuls of ergs, just so I wouldn't have the Bryd wake up on Tuesday, June 15, 2861, when in reality that date will fall on Wednesday.

If Mr. Burnett wants to go into big numbers any more, I can find the reference to the Skewes number for him, given time; and I recommend Jeans (it's out of print, but was published also under the title of "Eos" in 1929), and also George Gamow's "One, Two, Three... Infinity", which among other things discusses "The Problem of the Printed Line"—shall I say?—infinitely.

—Noel Loomis

(Somehow, this reminds me of the story of the teacher who gave his pupils a short oral examination in the following manner: each student would be asked no more than two questions, but if he answered the first correctly, he would be given 100, and would not have to answer the second question.

All went well, until the professor-doktor came to the class wiesenhimer; the pedagogue looked at the little monster for a moment, then smiled faintly and asked: "How many hairs has a cat?"

"Two million, eight hundred and forty-six thousand, five hundred and twenty-seven", replied the young incorrigible without batting an eyelash.

Silence followed; then, in a somewhat hushed tone, the mentor asked, "How do you know?"

"I don't have to answer that—remember?"

Somewhat dazed, our hero survived the rest of the day, then went to his club, where he started to tell the story to his colleagues. "The most astounding thing," he said, shaking his head. "I ask young Maxl, 'How many hairs has a cat?', and with the utmost confidence, he answers..." The professor broke off, then went to the telephone, called the young prodigy's home.

"Maxl, my boy—how many hairs did you say?"

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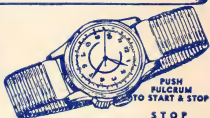
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